Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

AMERICAN DYESTUFF REPORTER

Annual Processing Review Number

DECEMBER 1, 1947
VOLUME 36, NO. 24

DEC 13

NEW *Chromacyl*®

ORANGE 2G (PAT.)

For self-shades or in combination with other "Chromacyl" types ... for application to woolens, worsteds, and carpet yarns. Very good fastness to light and perspiration ... good fastness to washing and fulling.

E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware

*Trade Mark

DuPont Dyestuffs

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

DU PONT

REG. U.S. PAT. OFF.

OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

FORMASET SR

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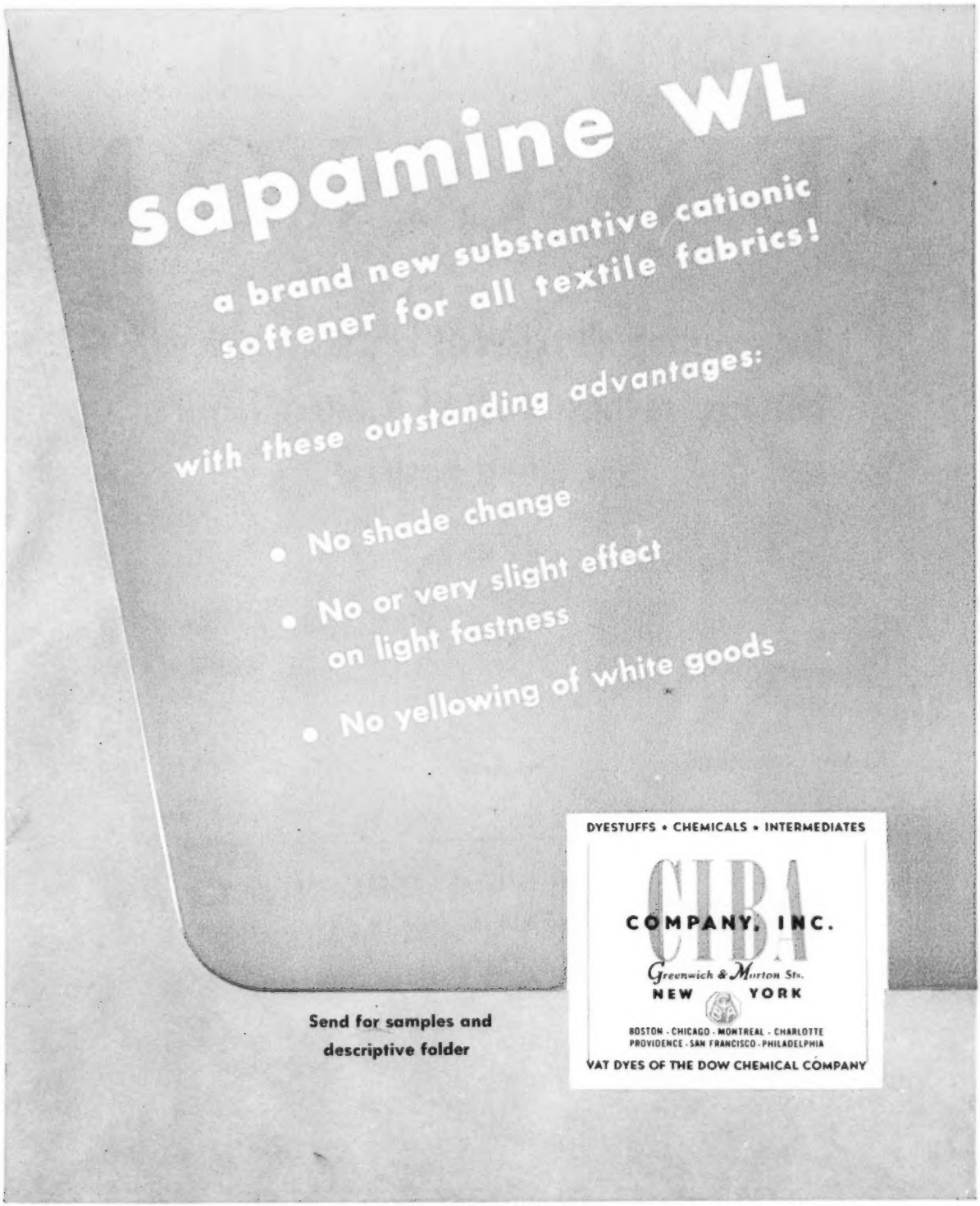
A NEW, ENTIRELY DIFFERENT, THERMO-SETTING RESIN FOR SHRINKAGE CONTROL OF RAYONS

A shrinkage control resin which cannot retain chlorine or develop amine or "fish" odors, FORMASET SR imparts a considerable degree of crush resistance. Shrinkage stabilization is complete for the life of the fabric.

Warwick technical advisors are available for consultation at all times.

WARWICK CHEMICAL COMPANY Division of SUN CHEMICAL CORP. 580 Fifth Avenue, New York 19, N. Y.

ANNOUNCING...


sapamine WL
a brand new substantive cationic softener for all textile fabrics!
with these outstanding advantages:
• No shade change
• No or very slight effect on light fastness
• No yellowing of white goods
Send for samples and descriptive folder
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VAT DYES OF THE DOW CHEMICAL COMPANY

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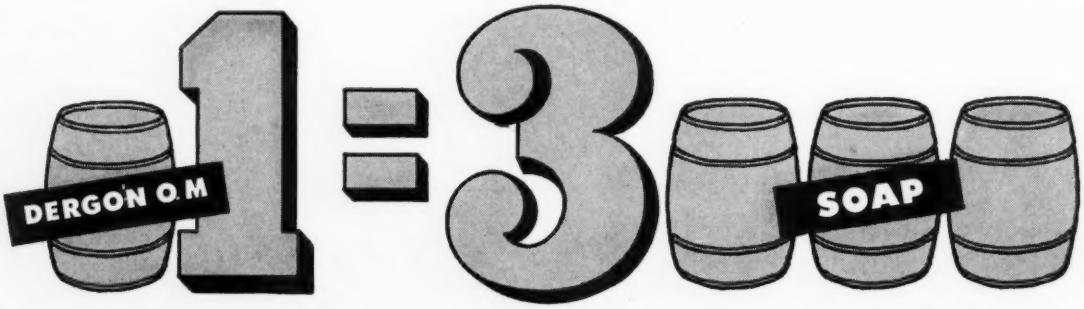
TO OVERCOME RISING COSTS:
REPLACE SOAP WITH
DERGON O M

(Reg. U. S, Pat. Off.)

for scouring all types of fabrics, woolens, cottons, rayons, and all knitted fabrics, including hosiery



DERGON O M IS A HIGHLY EFFICIENT DETERGENT AND A POWERFUL OIL EMULSIFIER

WRITE FOR INFORMATION OR DEMONSTRATION

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NEWARK, NEW JERSEY

MANUFACTURERS OF INDUSTRIAL CHEMICALS FOR OVER 40 YEARS

SO-DYE-SUL

PATENTED

Liquid

(READY-TO-DYE) SULFUR COLORS

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DYESTUFFS and CHEMICALS

SOUTHERN DYESTUFF CORPORATION

CHARLOTTE • NORTH CAROLINA

AGENTS IN THE SOUTHERN TEXTILE AREA FOR SHERDYES
MADE BY THE SHERWIN WILLIAMS CO.

THE STORY OF T

A New Principle

Tinopal B V A introduces an entirely new physical (optical) principle in the production of purer more brilliant white on textile fabrics.

It is common knowledge that heretofore the yellowing of the fibres has been counteracted by tinting with a bluing agent, i.e., a blue coloring matter, dyestuff or pigment, is applied to the fabric and combines with the yellow to give the illusion of white. The yellow ground plus blue, however, absorbs a certain proportion of light, causing a loss of reflected light and a resulting greyish shade.

Tinopal B V A, in counter distinction draws colorless from aqueous solutions to produce an intensive, but indiscernible fluorescence. It is this fluorescence which overcomes the yellowing of the textile fibres through Tinopal's optical bleaching action without dulling the shade. As a consequence, white light is reflected to a much greater extent than from the untreated fibre. However, a portion of the invisible ultra violet rays is converted into visible rays causing a bluish light reflection. This light reflection is retained despite washing and sun action so that when the prime bleaching is dissipated the light reflection is not materially affected. The intensity of the effect with Tinopal B V A depends on the amount of ultra violet rays falling on the material. Hence, the maximum whitening effect is achieved in clear daylight and minimum in artificial light.

Fibres Benefitted

Tinopal B V A has good affinity for vegetable fibres such as cotton, linen, hemp, viscose rayon in neutral or weakly alkaline baths. Woolens and Worsteds are amazingly whitened with Tinopal B V A. It is not suitable, however, for application to acetate.

Minimizes Full Bleach

In the bleaching industry, it will be found in many instances, full bleaching can be avoided with Tinopal B V A. It is possible to obtain an excellent white with goods merely boiled off or half bleached—thus permitting a shortening of the bleaching process for qualities where such a step will help preserve fibres which otherwise might be injured by prolonged treatment.

Bleaching

Because of the good resistance of Tinopal B V A to peroxide and other oxidizing agents, it is possible to use this product simultaneously in the bleaching process and avoid extra operations. Tinopal B V A is not effective in the normal chlorine bleach bath but can be used to advantage in the subsequent anti-chlor.

Kiers and Package Machines

Inasmuch as Tinopal B V A gives a good penetration and distributes itself uniformly, it can be applied advantageously in pressure kiers as well as to yarns in package dyeing machines.

Application in Finishing

Its powerful brightening effect is found of great assistance in many branches of the textile finishing trade. Small additions of Tinopal B V A to finishing compounds, like starches, often arrest yellowing of the white goods. Pre-treatment with this new whitening agent can also prevent yellowing encountered after hot calendering for the product is not susceptible to high temperatures to the same extent as are agents presently in common use.

Combination Fibred Fabrics

Tinopal B V A is also interesting for obtaining improved white effects on fabrics consisting of acetate and rayon. In such instances, the product can be used in conjunction with Hydrosulphite for removing the acetate color stain on the rayon.

Whitening Prints

In the case of Direct prints, the white ground can be considerably brightened by pre-treatment or after-treatment with Tinopal B V A and the design better contrasted against the brilliant background. If preferable Tinopal B V A may be incorporated in the sizing compounds for better whites—counteracting the yellowing usually suffered in aging. Because of Tinopal B V A's good resistance to Hydrosulphite, it may be used directly in the discharge paste for obtaining improved whites.

F TINOPAL B V A

CHARACTERISTICS OF TINOPAL B V A

Appearance: Tinopal B V A is a yellowish powder.

Strength: Tinopal B V A is highly concentrated and is usually applied in the proportion of from 2 to 5 grains per gallon. In view of this product's high tinctorial strength, it is advisable to use it in diluted solutions and to determine the quantities required by conducting preliminary tests.

Solubility: Tinopal B V A has good solubility and is dissolved by stirring with hot or boiling water in the proportion of 1:30. It should not be dissolved by means of direct steam and standing stock solutions should not be resorted to.

Exhaustion: Tinopal B V A exhausts well at temperatures from 80° to 105° F. High temperatures may be used if necessary. Since Tinopal B V A has the characteristics of a Direct dyestuff, its exhaustion and drawing properties are influenced by either Glaubersalt or Cooksalt. Consequently, salt additions should be made with caution to insure good penetration and uniform results.

Application of Tinopal B V A: Tinopal B V A is first dissolved in a solution of about 1:30 by stirring with hot or boiling water. The amount used is dependent on the required white effect and much also depends on the fibre and degree of bleaching. Since removal is very difficult, it is suggested that preliminary tests be made to ascertain the required proportions. The product can be applied in the ratio of 2 to 5 grains per gallon in kiers, reel machines, jigs, skein and package machines or stock dyeing apparatus—with application being made after bleaching or during the bleaching operation.* Small additions of Glaubersalt or Cooksalt are recommended to assist exhaustion. If impregnation must take place on a padder, 10 to 20 grains per gallon will usually suffice.

*Woolens and Worsteds should be processed after peroxide bleaching in a fresh bath.

CAUTION:— Tinopal B V A should not be used where cationic softening agents are employed.

FASTNESS PROPERTIES OF TINOPAL B V A

Light: Tinopal B V A has reasonably good light fastness.

Water and Laundering: Tinopal B V A has very good fastness to water and washing—fixation being so good it can only be removed by the use of permanganate bleach. Extreme caution must, therefore, be exercised in deciding on the quantity to be employed. Normal use of chlorine in laundering does not affect Tinopal B V A.

Acid: Tinopal B V A withstands diluted organic acids. If higher concentrations are used, yellowing takes place which can be subsequently counteracted by neutralization.

Metals: Copper, lead zinc, brass, bronze or stainless steel have little or no effect on Tinopal B V A. Iron, however, should be avoided as it produces brownish discolorations.

Bleachings Peroxides have little or no influence on Tinopal B V A. In chlorine bleached goods Tinopal B V A is applied in the subsequent anti-chlor.

Ironing or Hot Calendering: Tinopal B V A is not affected by ironing or hot calendering.

Dischargeability: Hydrosulphites have very little influence on Tinopal B V A.

Other Fastness: Tinopal B V A offers the following additional fastness properties, Storing, Perspiration, Decatizing, Mercerizing, Alkali, Sodium Perborate.

GEIGY COMPANY, INC.

89-91 BARCLAY STREET — NEW YORK—NEW YORK

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Dyestuff Makers Since 1859

In Great Britain
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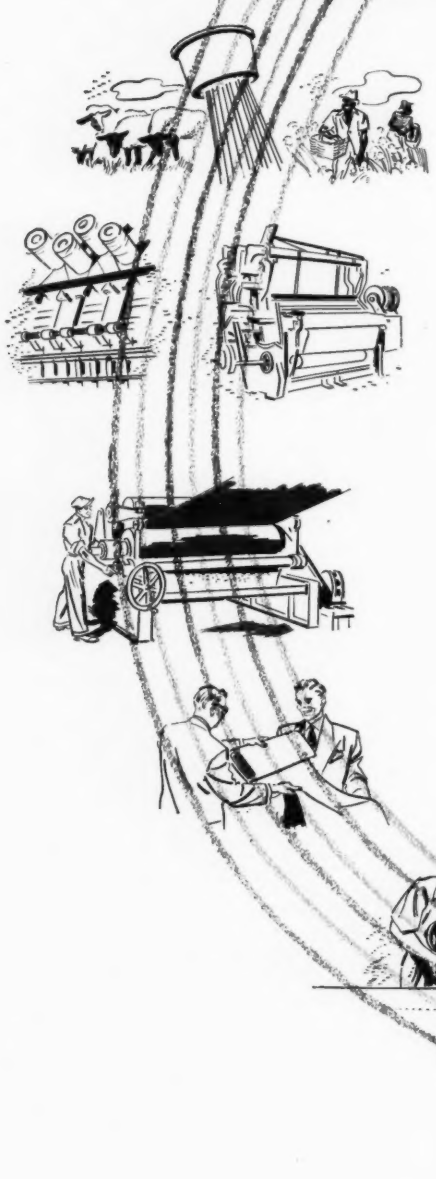
The Magic



A Fine Fabric...

Excellent Styling...

BUT... COLOR

A fine garment is the product of many skills from fiber producer to cutter. But the foremost element of customer appeal . . . Beauty . . . is provided chiefly by the Colorist.

The colors should be selected to produce this

BETTER THINGS FOR BETTER LIVING

. . . THROUGH CHEMISTRY

DU PONT

REG. U.S. PAT. OFF.

# of Color

is the Key to Beauty

beauty . . . and to retain it through the life of the garment.

The technical service of Du Pont is ready to assist in reaching these goals. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

Du Pont Dyestuffs

Three Hooker Chemicals That Help Make Thousands

Samples of Caustic Soda, as it comes from the Hooker "S" Cell, are checked carefully in the laboratory for strength and purity.

✓ **LIQUID CHLORINE**
✓ **CAUSTIC SODA**
✓ **MURIATIC ACID**

Hooker chemicals numbering over a hundred, and thousands of other products get their start from Caustic Soda, Liquid Chlorine and Muriatic Acid made by Hooker. Your supplies of these basic heavy chemicals are made possible to a large extent by the Hooker Type "S" electrolytic cell, designed and developed by our own engineers.

Caustic Soda, Liquid Chlorine and Muriatic Acid are produced and shipped from our plants at Niagara Falls, New York, and Tacoma, Washington. Helpful technical service and prompt shipping are corollary to the uniform high quality of these Hooker products.

Data sheets and other literature describing Hooker Chemicals are available upon request. If you don't have our latest General Products List, Bulletin 100, why not write today for your copy?

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HOOKER ELECTROCHEMICAL COMPANY

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Aluminum Chloride Paradichlorbenzene Monochlorbenzene Sodium Benzoate Sulfur Chlorides Sodium Sulfide Sodium Sulfhydrate

Levelene
NEW....IMPROVED
LEVELENE
the four-way dye-house assistant
• A LEVELING AGENT • A PENETRANT • A WETTING-OUT AGENT
• A STRIPPING AGENT FOR VAT COLORS
AMERICAN ANILINE PRODUCTS, INC.
50 Union Square, New York, N. Y. - Plant: Lock Haven, Pa. . . . . Branches: Boston, Mass.
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Chattanooga, Tenn. . . . Dominion Anilines & Chemicals Ltd. • Toronto, Canada • Montreal, Canada

AND NOW . . . THE

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ARMOUR'S QUATERNARY AMMONIUM SALTS

Newest of the Armour "Chemicals from Fats" are the ARQUADS—a group of alkyl trimethyl ammonium chloride compounds now available in quantity for textile processing.

Although their full utility is yet to be determined, foremost among their current textile applications are:

As cationic softeners . . . the ARQUADS greatly improve the hand, can be used in smaller quantities—have many additional advantages over other softeners for rayons, synthetic fibers, and resin-treated fibers. Excellent results are obtained in concentrations of as little as 0.1—0.25%.

In air-conditioning systems . . . with the growing importance of air conditioning in textile weave rooms, the ARQUADS become extremely valuable in treating the water used. As little as 1 ounce of ARQUAD per 1,000 gallons of water stops algae-clogging of spray nozzles —keeps down air-borne infectious germs.

A new booklet containing chemical and physical data on the ARQUADS and their uses is available upon request. The coupon below may also be used for requesting similar booklets on the ARMEENS (aliphatic amines), the ARMIDS (aliphatic amides), and the ARNEELS (aliphatic nitriles) if these booklets are not already in your files.

MAIL THIS COUPON TODAY!
(attached to your business letterhead, please)

Please send me booklets checked:

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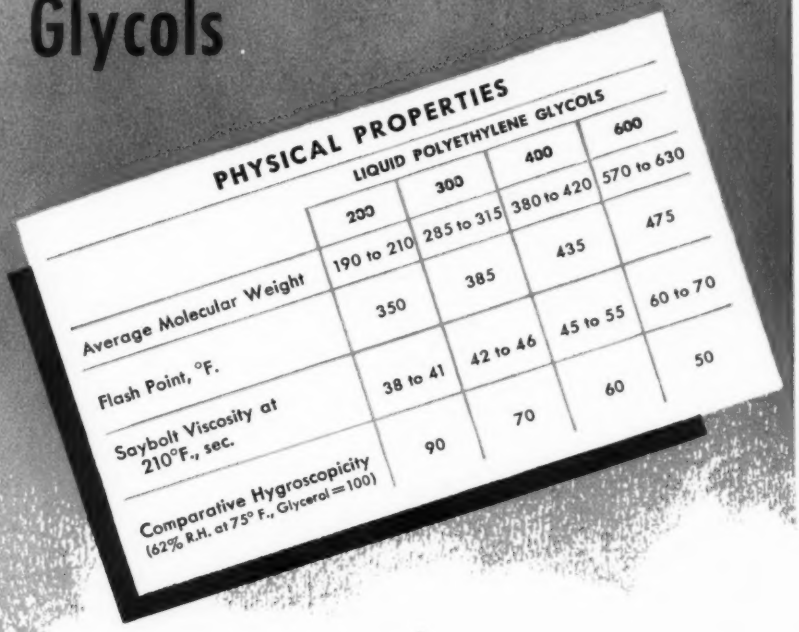
ARMOUR *Chemical* DIVISION

ARMOUR AND COMPANY

1355 West 31st Street • Chicago 9, Illinois

the answer to many product problems

Polyethylene Glycols



PHYSICAL PROPERTIES

	LIQUID POLYETHYLENE GLYCOLS			
	200	300	400	600
Average Molecular Weight	190 to 210	285 to 315	380 to 420	570 to 630
Flash Point, °F.	350	385	435	475
Saybolt Viscosity at 210°F., sec.	38 to 41	42 to 46	45 to 55	60 to 70
Comparative Hygroscopicity (62% R.H. at 75° F., Glycerol = 100)	90	70	60	50

The polyethylene glycols may hold the answer to your product problems — as they have in so many other industrial applications.

The polyethylene glycols are a series of liquid polymers that are completely soluble in water and in many organic solvents. Water-white, these commercial compounds are less volatile than glycerol and hence more permanent. They are heat-stable, inert to many chemical agents, and do not hydrolyze or deteriorate. Their special characteristics can be advantageously applied in a variety of end uses.

Some present uses of polyethylene glycols

Plasticizers and dispersants—for casein and gelatin compositions, glues, zein, cork, and special printing inks.

Mutual solvents—for zein and other proteins, dyestuffs, and essential oils.

Lubricants—water-soluble lubricants in warp sizes and yarn conditioners.

Intermediates—for production of alkyd-type resins — emulsifying agents—detergents.

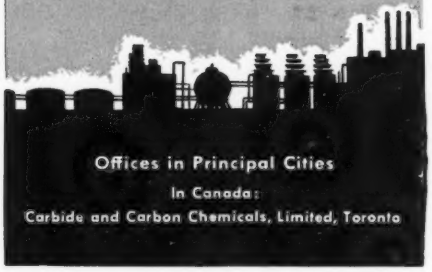
Humectants—particularly effective because of lower vapor pressure, wide solvent power, controllable hygroscopicity, and lower viscosity.

Complete data on these versatile materials is contained in the free booklet F-4772; when writing for your copy please address Dept. A-12.

CARBIDE and CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.



Offices in Principal Cities

In Canada:

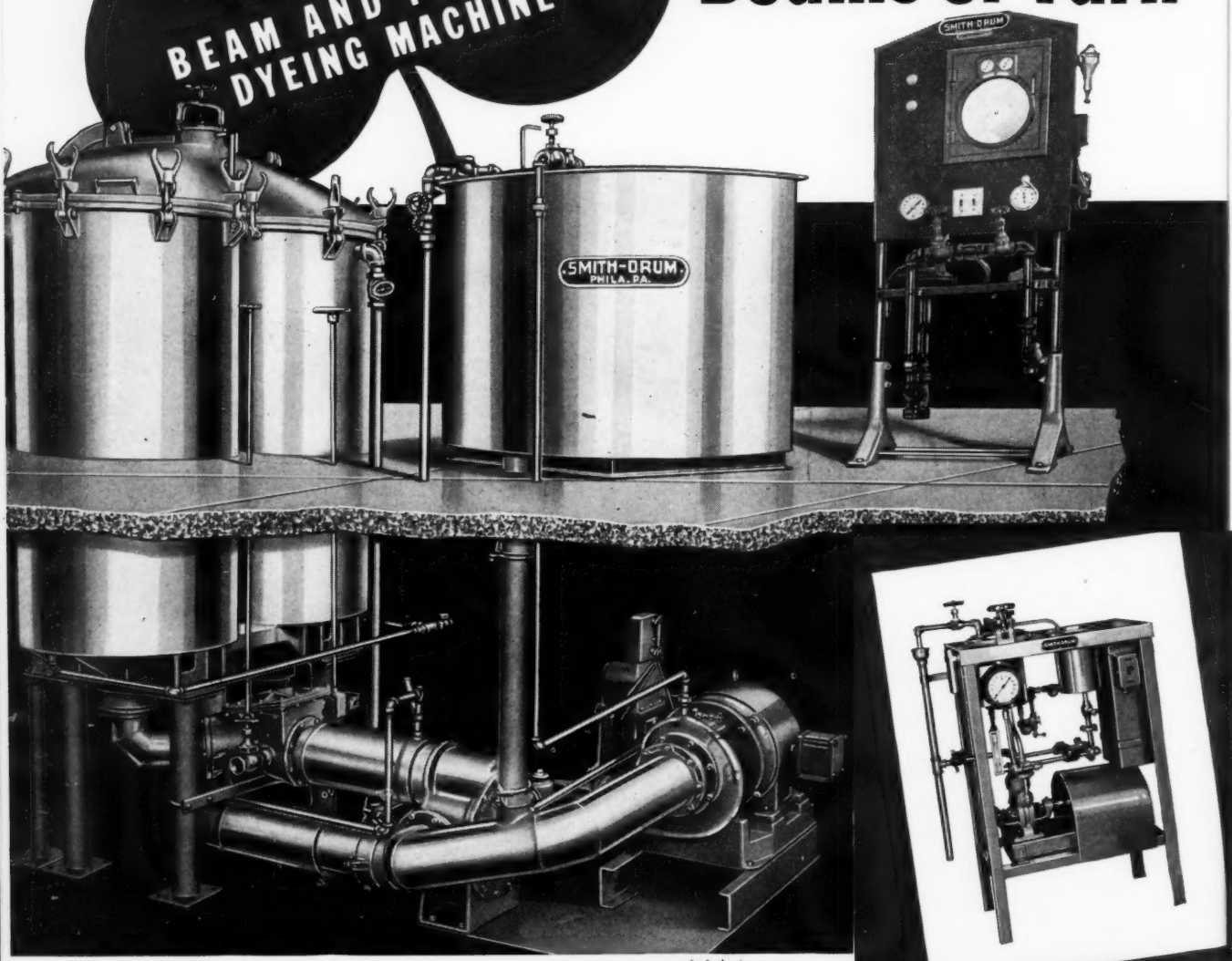
Carbide and Carbon Chemicals, Limited, Toronto

The *Only* Machine That Will Dye 1, Beams or Yarn

SMITH-DRUM

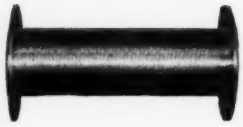
Clover Leaf

BEAM AND PACKAGE DYEING MACHINE

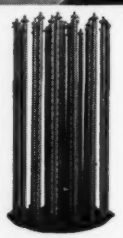


This machine, which dyes a single package, is for use in determining formulas to be used in larger machines. Sample is dyed under exact conditions and control as in larger machines.

Stainless steel dye beams are manufactured by Smith, Drum for use with the Clover-Leaf Beam and Package Dyeing Machine.



Special package carrier supplied with Smith-Drum Clover-Leaf Machine. This is the type used with packages wound on large diameter tubes or springs.



2, 3 or 4

Carriers Under *Identical* Conditions

This revolutionary Smith-Drum Machine makes it possible, for the first time, to dye as many as *four* beams or yarn carriers at once, in the same machine, with exactly the same liquor ratio as required to dye only *one!* This results in absolutely uniform dyeing . . . because each beam or package carrier is dyed at identical temperature, pressure, flow and with the same additions of dyestuffs.

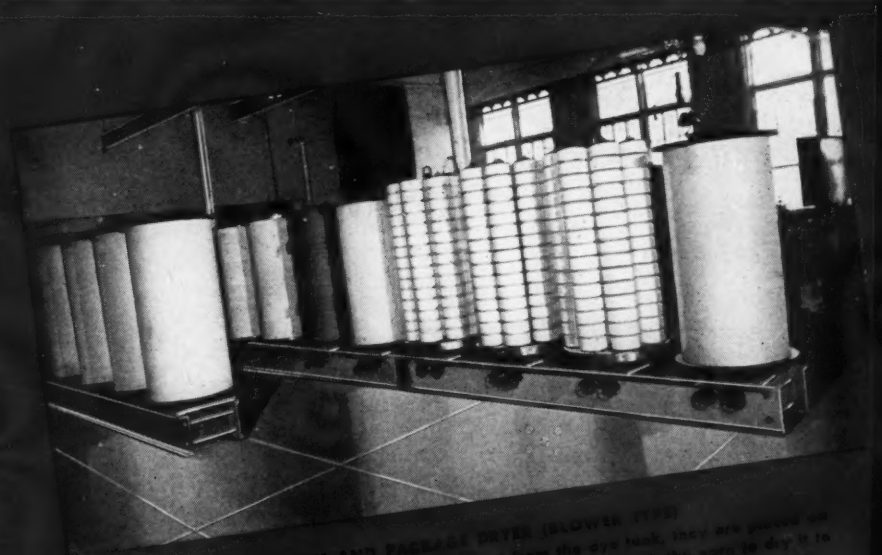
When less than a full load is to be dyed, pressure flow and liquor ratio are automatically adjusted so that they remain the same as when dyeing a full load. Furthermore, pressure and flow can be varied at will by the operator, to allow for various sized beams.

This machine not only assures uniform dyeing results but also permits definite economies in operation. It is equipped with valve to permit extraction of yarn by air pressure before it is removed from the dye tank.

Other Smith-Drum auxiliary equipment for preparing the yarn for dyeing and for drying the yarn after extraction is illustrated and briefly described below. Complete information will be sent you upon request. Write

SMITH, DRUM & COMPANY

Allegheny Ave. at 5th St., Philadelphia 33, Pa.



BEAM AND PACKAGE DYER (CLOSED TYPE)

After beams or package carriers are removed from the dye tank, they are placed on the ports of this Smith-Drum Dryer. Heated air is forced through the yarn to dry it to the desired moisture content.

Appearance Makes the Sale

Stockings finished with Filaseal Resin Finishes stay new and fresh looking even after handling. For Filaseal gives stockings *memory* . . . the added quality that causes stockings to return to their original shape no matter how they are handled or creased.

Stockings with *memory* have added body . . . extra snag resistance. Boarding, examining, pairing, folding—every step in the finishing operation is made easier and performed at greater speed with Filaseal. The number of seconds due to snags and pulls is greatly reduced. No special equipment is needed to apply Filaseal. It can be applied in the finishing bath after the dye is dropped.

For increased production, for selling appearance, give your stockings *memory* with Filaseal Resin Finishes.

AMALGAMATED CHEMICAL CORP.
Philadelphia 34, Penna. : : Southern Representative
Robert A. Bruce, P. O. Box 35, Greensboro, N. C.

Filaseal

—to give your stockings *memory*

Stockings that look "handled" stay on the hosiery counter until all the "fresh" stockings are sold.

Stockings finished with Filaseal sell faster...stay smooth and fresh . . . resist snags and pulls.

ALKAMERCE

THE IDEAL MERCERIZING PENETRANT

HAS MORE "Reasons why"

ALKAMERCE, a Hartex product, is the ideal mercerizing penetrant, scientifically made to give you these advantages:

- **Eliminates all preparation of the yarn.**
- **May be dissolved directly in the mercerizing caustic.**
- **Does not lose its wetting power on standing.**
- **Does not form a scum in the caustic.**
- **Is easily washed out of the goods.**
- **Has low solvent effect on cotton waxes and pectins.**
- **Will not foam or cause sludge formation in caustic recovery systems.**
- **Has a low exhaustion rate. ALKAMERCE is only slightly absorbed by the cotton. Thus, it permits larger quantities of cotton to be treated before additions of penetrant are necessary.**

In the final analysis a mercerizing penetrant must have the ability to cause caustic soda solutions of mercerizing strengths to wet untreated cotton rapidly. Let our demonstrator prove, in *your* plant, the superiority of ALKAMERCE.

HART PRODUCTS CORPORATION
1440 Broadway, New York, N. Y.

HARTEX PRODUCTS

Rayon Oils & Sizes	Delustrants
Nylon Oils & Sizes	Leveling Agents
Kier Bleaching Oils	Cationic Softeners
Finishing Oils	Cotton Warp Dressings
Synthetic Detergents	Wetting-Out Agents
Conditioning Agents	Weighting Agents
Scrooping Agents	Mercerizing Penetrants
Splashproof Compounds	

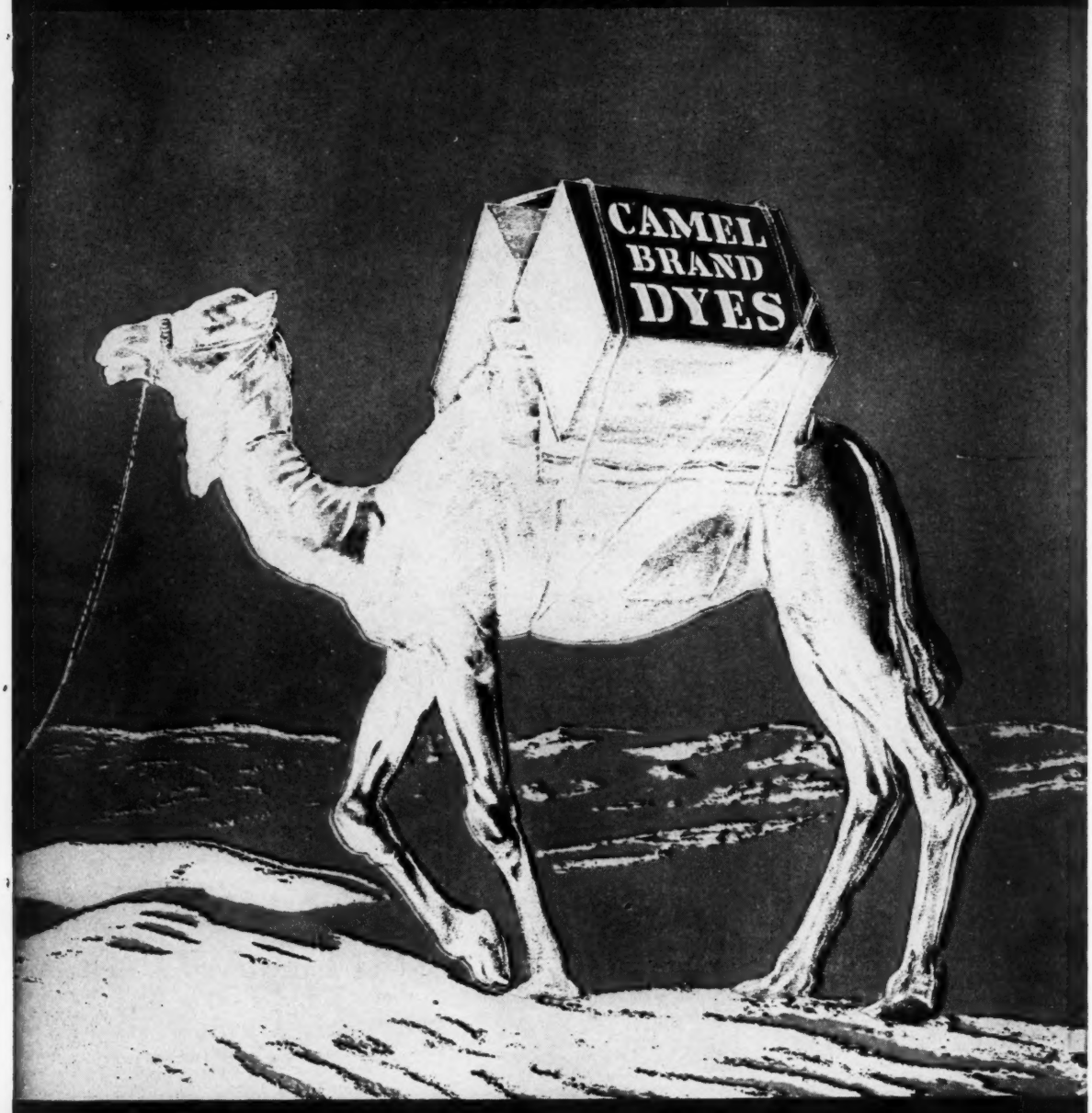
Send for free booklet, "Mercerizing and ALKAMERCE – The Ideal Dry Mercerizing Penetrant"

Hart PRODUCTS

based on research

QUALITY DYESTUFFS

SINCE 1878



JOHN CAMPBELL & COMPANY, INC.

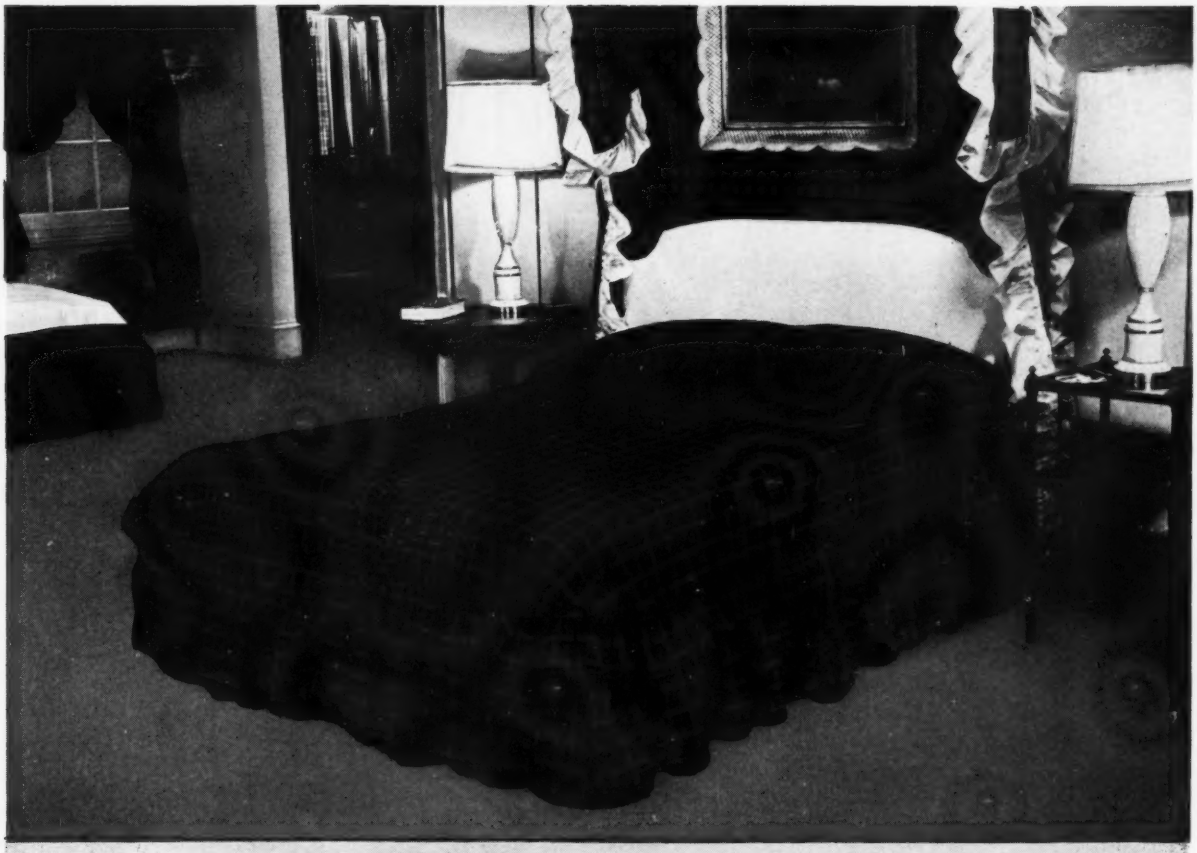
75 HUDSON STREET • NEW YORK CITY

TELEPHONE: BArclay 7-6228-6229

PHILADELPHIA: BROAD AND SPRING GARDEN STS.

BRANCH OFFICES AND WAREHOUSES:

BOSTON EAST CLEVELAND, OHIO ATLANTA, GA.



Wide Range of Effects in Body and Stiffness

XYNO RESINS are water dispersions of thermoplastic synthetic resins readily manipulated to give any desired finish, from a full, mellow hand to a good stiff body. They are primarily used for cotton, rayon, nylon and acetate constructions.

Xyno Resins AA-40, S-69 and 362 are three distinct types of resins, each creating specific and characteristic effects. Any of these resins can be used as a base to which Liquid Resin SS can be added to insure greater crispness and stiffer hand.

XYNO RESINS

Finishes obtained from these resins show satisfactory resistance to household laundering and do not impair lustre in any way. Goods are treated in the usual manner, *without curing or high temperature setting of the resin.*

Xyno Resins contain no solvents and are completely stable at all dilutions. They are compatible with alkalies, dilute acids and hard water.

onyx

CHEMICALS FOR DYEING AND FINISHING

Onyx Oil & Chemical Company

JERSEY CITY 2, N. J.

CHICAGO • PROVIDENCE • CHARLOTTE • ATLANTA • LOS ANGELES

In Canada: Onyx Oil & Chemical Co., Ltd. Montreal, Toronto, St. Johns, Que.

For Export: Onyx International Jersey City 2, N. J.

Score at the FINISH!

Whether the goal is sales or sports . . . it's the *finish* that counts. Hosiery, and other textile products . . . to have *sales appeal* must have *eye appeal*.

For all your textile chemical needs . . . detergents, wetting agents, water repellents, cationic softeners, etc., you can depend on Fancourt materials and "know-how" to help you cash in *at the finish*.

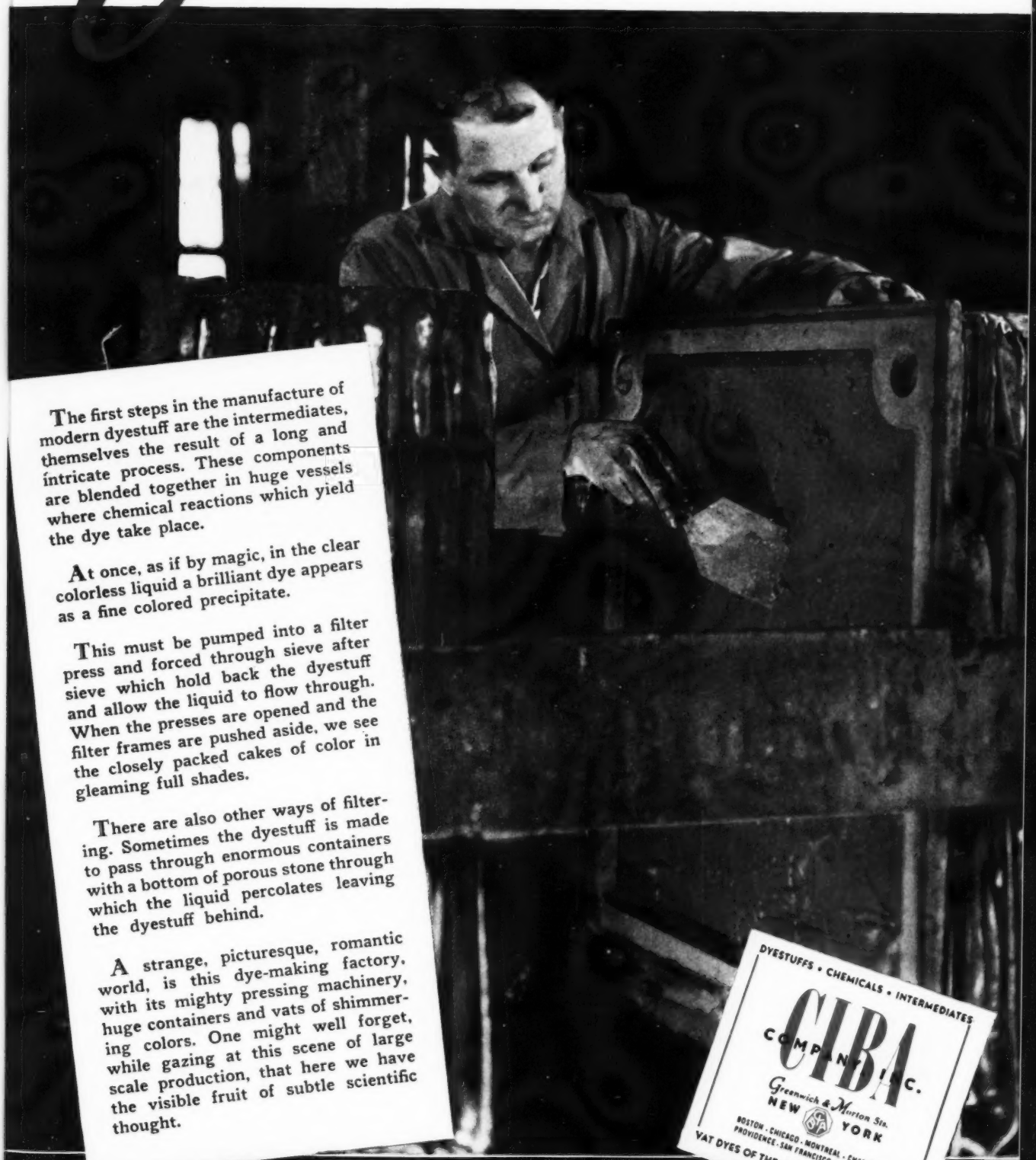
W. F. FANCOURT & CO.

PHILADELPHIA, PA.

In the South, Howard A. Virkler, Greensboro, N. C.

Solving Finishing Problems Since 1904

Ciba DYESTUFF GLIMPSES



The first steps in the manufacture of modern dyestuff are the intermediates, themselves the result of a long and intricate process. These components are blended together in huge vessels where chemical reactions which yield the dye take place.

At once, as if by magic, in the clear colorless liquid a brilliant dye appears as a fine colored precipitate.

This must be pumped into a filter press and forced through sieve after sieve which hold back the dyestuff and allow the liquid to flow through. When the presses are opened and the filter frames are pushed aside, we see the closely packed cakes of color in gleaming full shades.

There are also other ways of filtering. Sometimes the dyestuff is made to pass through enormous containers with a bottom of porous stone through which the liquid percolates leaving the dyestuff behind.

A strange, picturesque, romantic world, is this dye-making factory, with its mighty pressing machinery, huge containers and vats of shimmering colors. One might well forget, while gazing at this scene of large scale production, that here we have the visible fruit of subtle scientific thought.

DYESTUFFS • CHEMICALS • INTERMEDIATES

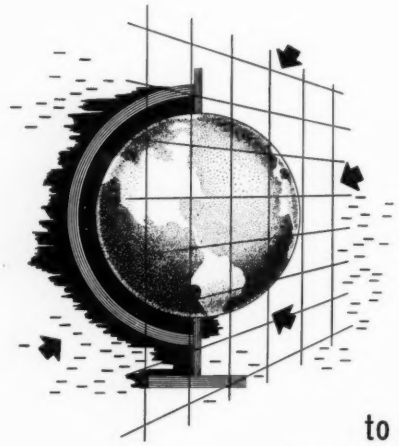
CIBA COMPANY, INC.

Greenwich & Morton Sts. NEW YORK

BOSTON · CHICAGO · MONTREAL · CHARLOTTE
PROVIDENCE · SAN FRANCISCO · PHILADELPHIA

VAT DYES OF THE DOW CHEMICAL COMPANY

NEOLANS ON WOOL = SIMPLE PROCESSING . . .
EASY SHADING . . . LEVEL DYEING . . .



Spin the Globe...

There's a FALLEK Representative Everywhere!

Here is your opportunity to secure World Wide Distribution for American Dyestuffs ...

READ THESE FIGURES!

92% of the world's total exports in Coal-Tar Colors, Dyes and Stains were supplied by Europe to the rest of the world.*

4.6% of the world's total exports in Coal-Tar Colors, Dyes, and Stains were supplied by the United States to the rest of the world.*

With foreign production at a minimum level, now is the opportune time for American Suppliers to secure a solid foothold in the most lucrative overseas markets . . . and here is how FALLEK can help you:

FALLEK . . . eliminates costly credit risks. *You receive your check when your goods are ready for shipment . . .* as simple as a domestic transaction, but larger profits.

FALLEK . . . creates an acceptance for your products throughout world markets that assures continuous business.

FALLEK . . . gains you the proper entree with leading firms of known responsibility.

FALLEK . . . gives you intelligent, daily sales coverage through representatives located in every world market.

FALLEK . . . means permanence, through long established outlets in Europe, Latin America, and the Orient.

FALLEK . . . saves you the detail handling and numerous expenses of operating an export department.

FALLEK . . . brings you men of wide experience, men highly skilled in the problems of world distribution . . . plus skilled technicians in every foreign office fully equipped to render all the technical information necessary to users of American Dyestuffs.

American dyestuffs for textiles, leather, paper, etc., are in urgent demand throughout the world. You can realize a sizeable share of this business by making FALLEK your foreign selling agents. THIS is the time to safeguard profits against the hazards of "buyer's market" or a falling off in domestic demand, by developing a substantial export volume. FALLEK can do this for you.

**U. S. Tariff Commission Report No. 19 last pre-war figures 1946*

WRITE, WIRE OR PHONE FOR FURTHER INFORMATION.

FALLEK PRODUCTS COMPANY, INC.

165 BROADWAY • NEW YORK 6, N. Y.

SPECIALISTS IN ORGANIC CHEMICALS

ATCOPEN 2-T

Penetrates the Heart of WETTING OUT AND REWETTING PROBLEMS ON ALL TYPES OF FABRICS!

USE ATCOPEN 2-T FOR PEAK EFFICIENCY IN THESE PROCESSING OPERATIONS

1. Wetting and rewetting operations.
2. Levelling agent.
3. All dyeing operations.
4. Scouring and boiling off all types of fabrics.
5. Pasting dyestuffs.
6. Bleaching operations.
7. Desizing operations.
8. Washing all types of prints.
9. Kier boiling.
10. Carbonizing.

Use ATCO Products

Atlantic Chemical Co., Inc.

MAIN PLANT: CENTREDALE, RHODE ISLAND
BRANCH OFFICE: PATERSON, NEW JERSEY

ATCOPEN 2-T Product Samples Furnished on Request

COMMONWEALTH
COLOR & CHEMICAL CO.

More than thirty years' experience in the manufacture of Dyestuffs, Converted Starches, Waterproofing Agents, Sulphonated Oils, Finishing Compounds, Penetrators, Detergents, Bleaching Agents, Sizing Materials, and other Chemical Specialties for the Textile and Allied Trades...

MAIN OFFICE AND WORKS: NEVINS, BUTLER and BALTIC STS., BROOKLYN 17, N
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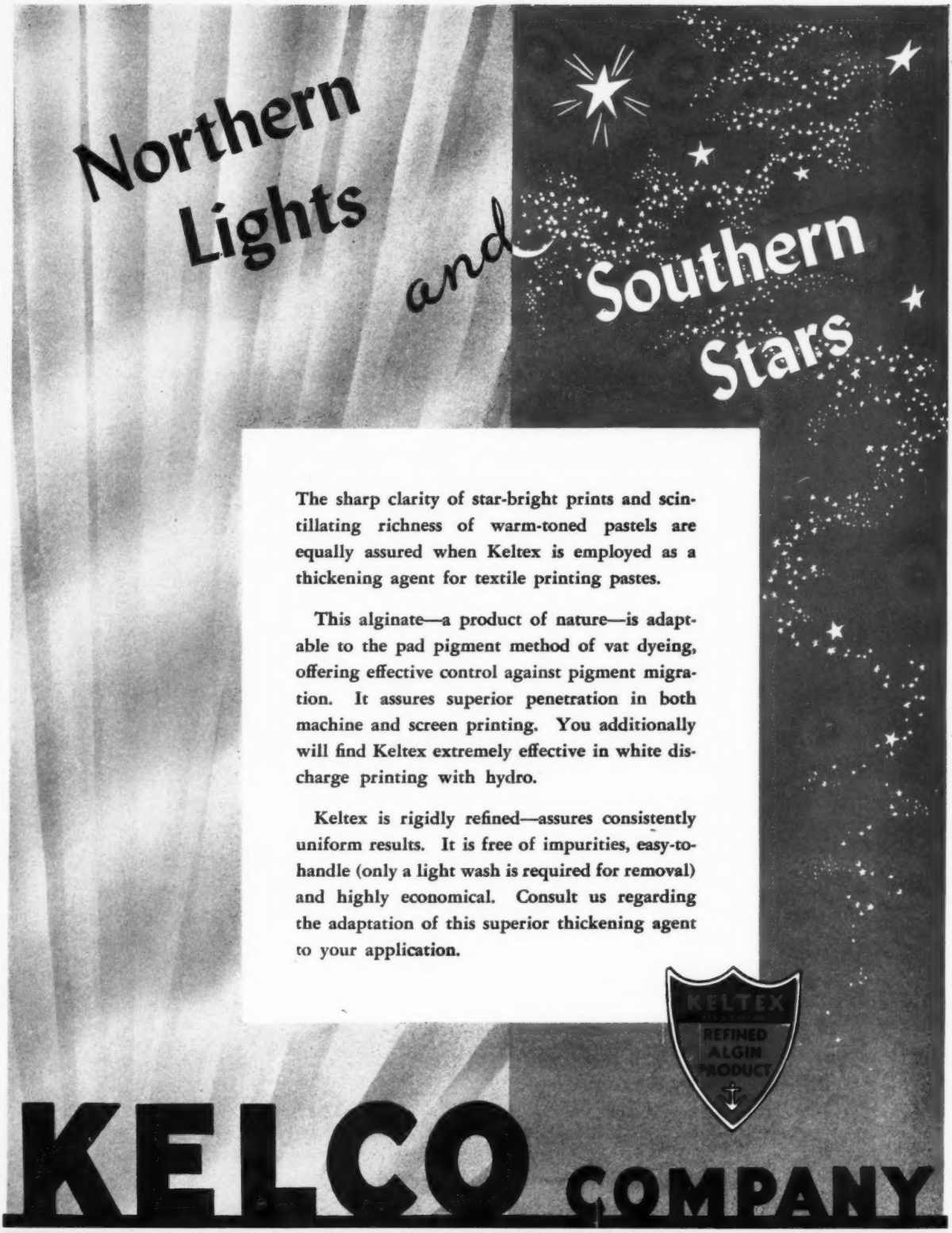

The sharp clarity of star-bright prints and scintillating richness of warm-toned pastels are equally assured when Keltex is employed as a thickening agent for textile printing pastes.

This alginate—a product of nature—is adaptable to the pad pigment method of vat dyeing, offering effective control against pigment migration. It assures superior penetration in both machine and screen printing. You additionally will find Keltex extremely effective in white discharge printing with hydro.

Keltex is rigidly refined—assures consistently uniform results. It is free of impurities, easy-to-handle (only a light wash is required for removal) and highly economical. Consult us regarding the adaptation of this superior thickening agent to your application.

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ALGIN
PRODUCT

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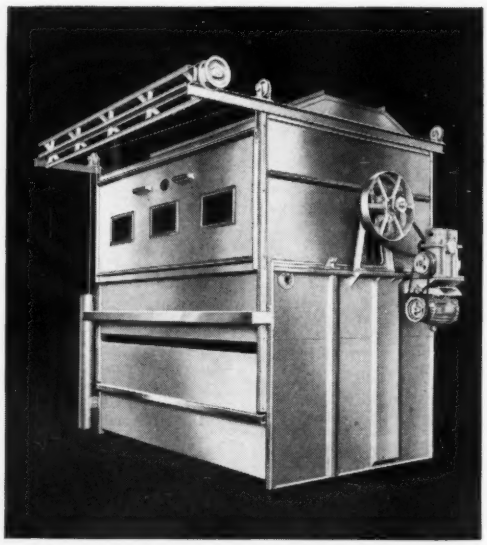
Hunter

1847 One Hundred Years 1947

5 ADVANTAGES

OF MODERN, HUNTER STAINLESS STEEL KETTLE

FOR PIECE DYEING & BLEACHING



The unique design and many refinements of the Hunter Stainless Steel Piece Dye Kettle make it the last word in modern, totally enclosed dyeing and bleaching equipment. It is unusually flexible, easy and economical in operation and, because of its rugged construction, it will give years and years of service. It will pay you to study the five advantages listed below, if you are planning to replace or expand your present dye house unit.

WRITE FOR FULL INFORMATION

1. Vibrationless construction: all driving and driven members supported in newly designed separate frames.

2. Three-speed drive for main reel for increased flexibility.

3. A size and type for any piece dyeing or bleaching requirements.

4. A tight top enclosure, which is windowed and lighted, saves up to 35% of steam for the dyeing cycle. Entire Kettle may be insulated if required.

5. Proved performance on fabrics ranging from mohair plushes, woolens, worsteds, unions and blankets to spun rayons, etc.

JAMES HUNTER MACHINE COMPANY, NORTH ADAMS, MASS.

NOW... *Redder* Shades of Black

ON ACETATE RAYON WITH

Hydroxanil "2R"*

Hydroxanil 2R has been developed in answer to popular demand for redder shades of acetate black than those produced through the use of Hydroxanil G. Hydroxanil 2R has all the superior qualities of Hydroxanil G, including, superior wash fastness, resistance to sublimation and perspiration fading.

HYDROXANIL 2R is used in the same manner as Hydroxanil G, and is ideal for producing *wash fast* developed black on acetate and rayon combination materials through the use of acetate developed black and rayon developed black in place of rayon direct black.

With Hydroxanil G and Hydroxanil S, a new member of the Hydroxanil family, a complete line of fast developed colors can be obtained on rayon, cotton and union materials.

HYDROXANIL G (formerly simply Hydroxanil), Hydroxanil 2R, and Hydroxanil S are currently available in commercial quantities and may be used to great advantage not only for their superior qualities but also to replace B.O.N. and Beta Naphthol.

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*Patent applied for

Let us solve your developer problems during these days of developer shortages

MAHER COLOR & CHEMICAL CO.

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the big 4

OLEIC ACID (RED OIL)

highest stability red oils

All grades of Emery's Oleic acids exhibit unique stability as demonstrated by their resistance to OXIDATION and RANCIDITY; better performance in Mackay Test.

LARD OIL

lard oil (winter strained)

Emery manufactures Lard Oils which conform to standard "Industry" specifications but which are characterized by a uniformity uncommon among lard oils and which can be furnished with pour points lower than standard specifications.

SOLUBE 463

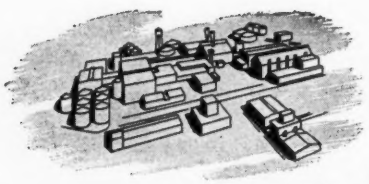
easiest scourability

A very stable wool and worsted lubricant designed specifically to reduce the amounts of soap needed in scouring (and fulling), some fabrics require none. Solube 463 most readily scourable of any oil available.

WOOL AND WORSTED OILS

wool oil—worsted MC

Twitchell Worsted Oil MC and Wool Oil 308, sulfonated mineral type oils, have long been accepted for wool and worsted stock lubrication. These self-emulsifiable, extremely stable oils are recommended for normal uses not requiring the unusual scourability of Twitchell Oil 463.



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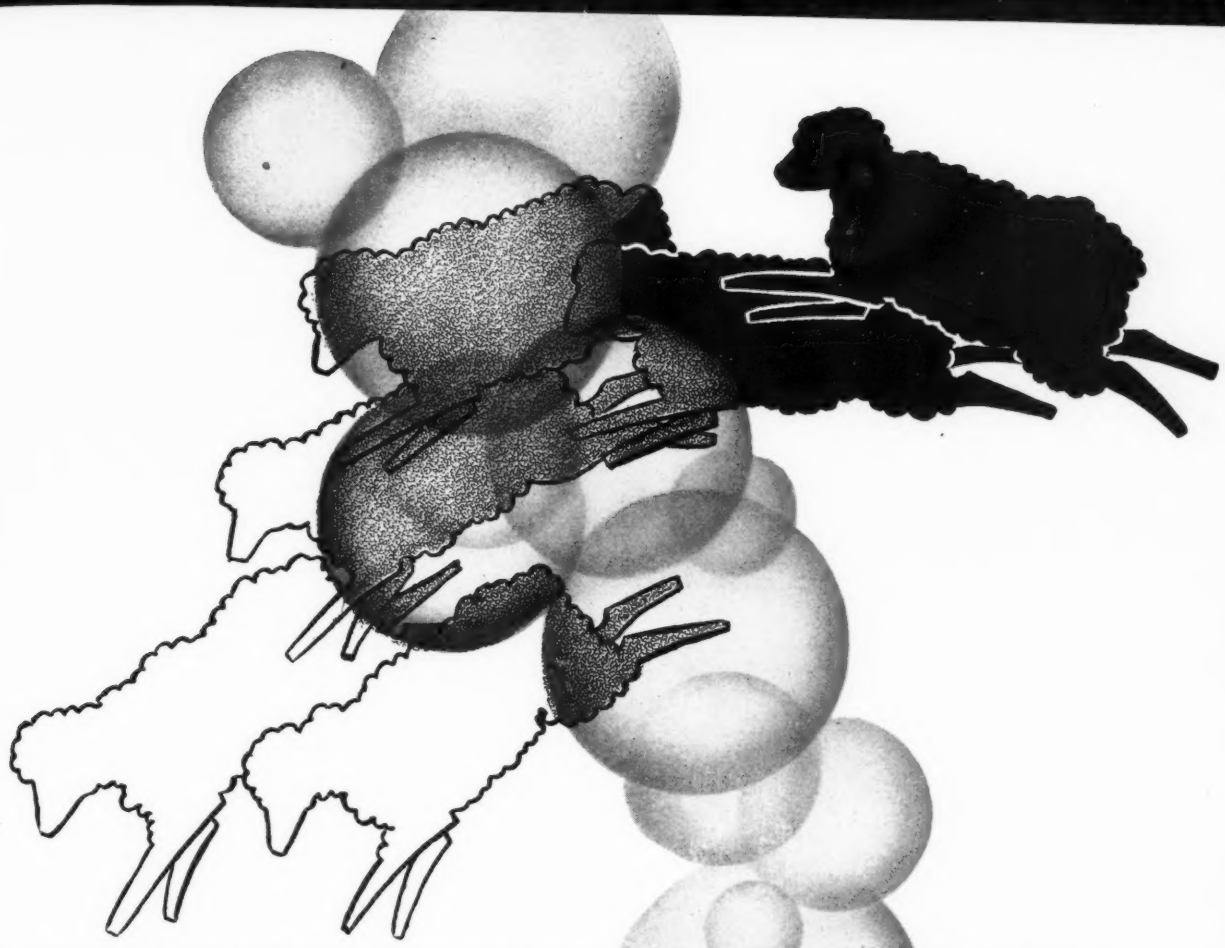
STEARIC ACID • OLEIC ACID • ANIMAL AND VEGETABLE FATTY ACIDS • TWITCHELL PRODUCTS • PLASTICIZERS



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COSTS LESS THAN SOAP
DOES MORE THAN SOAP

NACCONOL* NR

AMERICA'S LEADING SYNTHETIC DETERGENT

Additional production now available. Inquiries invited.

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National Aniline DIVISION • ALLIED CHEMICAL & DYE CORPORATION

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"Style isn't what I look for first..."

She knows that style, in bathing suits and street suits, can vary widely and still be "in fashion" . . . but she knows, too, there can be no question about the *quality* of the fabric. And fine fabric depends so much on proper processing.

That explains why so many of America's leading mills, converters, finishers and dyers have turned to Colgate-Palmolive-Peet for high-quality wetting, fulling, scouring and dispersing agents.

Remember, there is a C.P.P. soap or synthetic detergent for every type of fabric—for every processing problem. Ask your local Colgate-Palmolive-Peet representative for details. Or, write to Industrial Department, Colgate-Palmolive-Peet Co.

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COLGATE FORMULA 25
COLGATE WHITE SOAP FLAKES
ARCTIC CRYSTAL FLAKES
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Colgate-Palmolive-Peet Co.

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THE FINEST AND MOST DURABLE DYESTUFFS KNOWN
General Dyestuff Corporation

NYANZA

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FINISHING MATERIALS

FOR

WOOL—COTTON—RAYON—ACETATE
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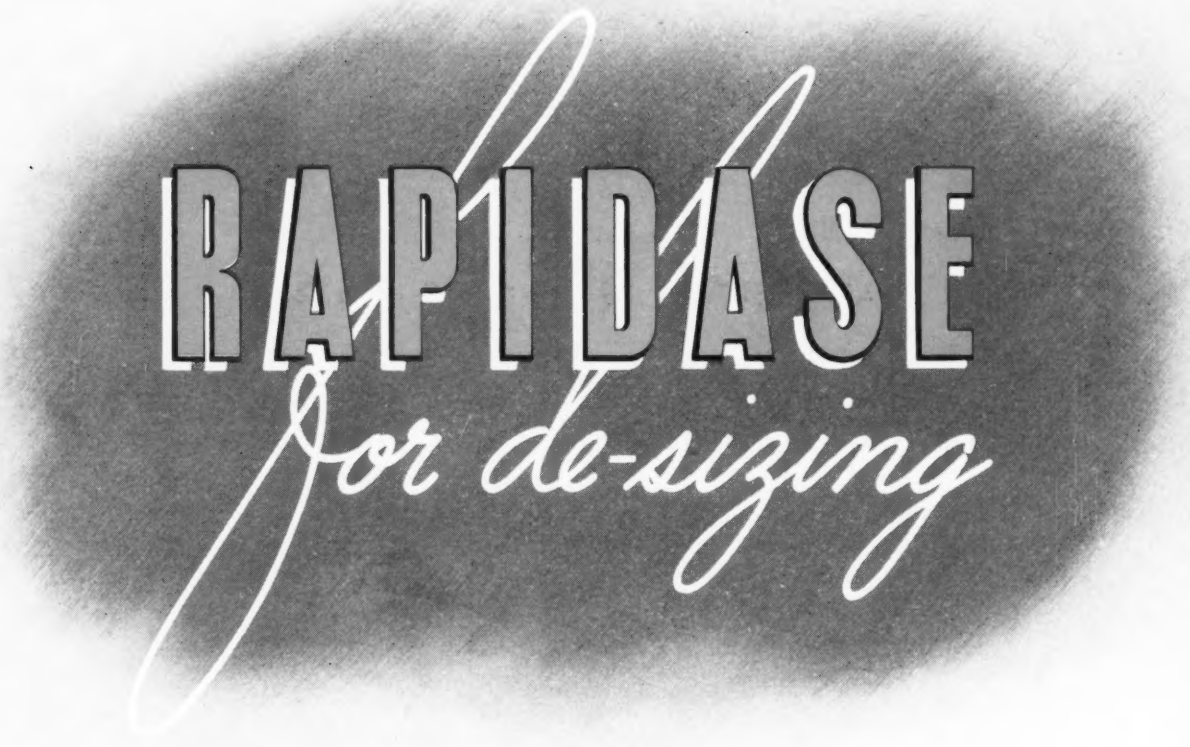

The dependable, rapid and economical de-sizing agent for cottons, rayons and mixed goods. Applicable over a wide range of processes, temperatures and speeds.

HAS PROVED PARTICULARLY SUITABLE FOR CONTINUOUS DE-SIZING

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FOR INSTANT WETTING...

WETSIT

• This improved synthetic surface-active agent reduces surface tension, increases penetration, and overcomes the weakness of soap. Its use saves time in processing, reduces cost of detergents, and assures an improved and uniform finished product.

A clear liquid, Wetsit is completely soluble in water in any proportion. It will not injure the most delicate fabric and can be removed with a minimum of rinsing. Efficient, low in cost, Wetsit is available in various concentrations for different purposes.

Write for free samples.

Available In These Concentrations:

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WETSIT EXTRA • WETSIT W-1086M

WETSIT W-1235 (Solvent Soluble) • WETSIT CONC.

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Leading dye makers and textile dyers *consistently* specify SOLVAY Sodium Nitrite to develop their azo dyes . . . *Experience* has proven to them that when they specify "Solvay," they get *quality* colors. If *you* want quality, specify SOLVAY.

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SODIUM NITRITE
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A COMPLETE LINE OF

DYESTUFFS

for all branches of

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ACID
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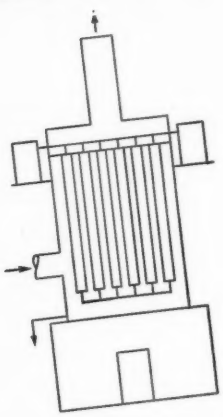
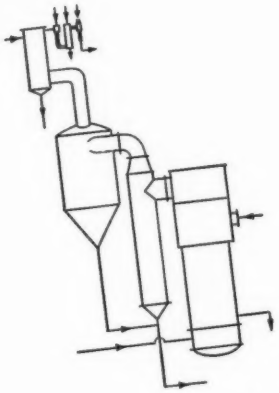
STOP H_2SO_4 COLD!

with Carbon . . . Graphite . . . and "KARBATE" Impervious Graphite!

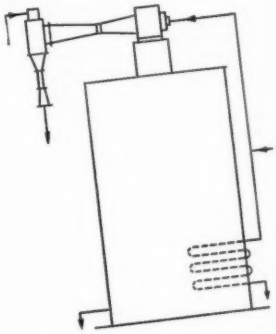
● "National" Carbon, Graphite, and "Karbate" Impervious Graphite are the most efficient materials for handling sulphuric acid. Equipment made of these materials is resistant to chemical attack by sulphuric acid up to 96% concentration. Moreover, it is light in weight, machinable, and mechanically strong. It is resistant to thermal and mechanical shock. There is no metallic contamination of the product. Both Graphite and "Karbate" Impervious Graphite have the highest heat-transfer rate of any practical material used in handling corrosive substances.



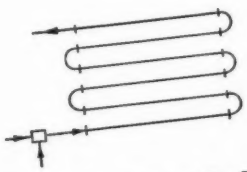
Electrostatic Precipitators for Acid Mists — All corrosion eliminated with **carbon** housing, stack, tubes, beams, and grillage.



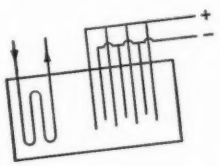
Spin-Bath Evaporators — Improved heat-transfer rates and no metallic contamination with **"Karbate" Impervious Graphite** heating elements and auxiliary parts.



Acid Concentrators — Spalling problems solved with carbon-lined bodies. Vapor piping, steam ejectors, and barometric condensers protected from erosion and corrosion by **carbon or graphite** linings.



Acid-Dilution Equipment — 66 deg. Be. H_2SO_4 "cut" to any lower concentration quickly and economically with **"Karbate" Impervious Graphite** mixers, coolers, pumps, pipe, fittings, and valves.



Plating-Solution Heat Exchangers — No metallic contamination with high-heat-transfer, corrosion-resistant **"Karbate" Impervious Graphite** exchangers.

The terms "National" and "Karbate" are registered trade-marks of

NATIONAL CARBON COMPANY, INC.

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SERVING THROUGH SCIENCE

In your new lines . . . easy-to-apply

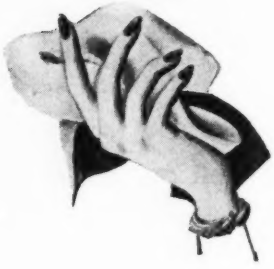
Kandar*

Permanent Finish

to brighten COLORS

to sharpen PRINTS

to improve the HAND



Colors come out cleaner and clearer . . . prints are sharper and more definitely described . . . the hand and fullness of cottons and rayons vastly improve when treated with Kandar — the new permanent finish from the United States Rubber Company Laboratories.

Yet to apply Kandar you need not install new equipment. Kandar can be applied without additional labor and at the same time as other fabric finishes. No curing needed — no objectionable odors. We welcome inquiries from weavers, dyers, finishers and cutters. Technical cooperation in your mill without charge or obligation. Write to

NAUGATUCK CHEMICAL

Division of United States Rubber Company

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VULCANOLS

for sizing and finishing

VULCANOLS have proven to be efficient for the production of durable, flexible finishes, on tickings, shade cloths, book cloths, baggings, pile fabrics, hair cloths, label cloths and carpets.

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VULCANOLS are economical plasticizers and binders providing finishes of increased resistance to mechanical removal.

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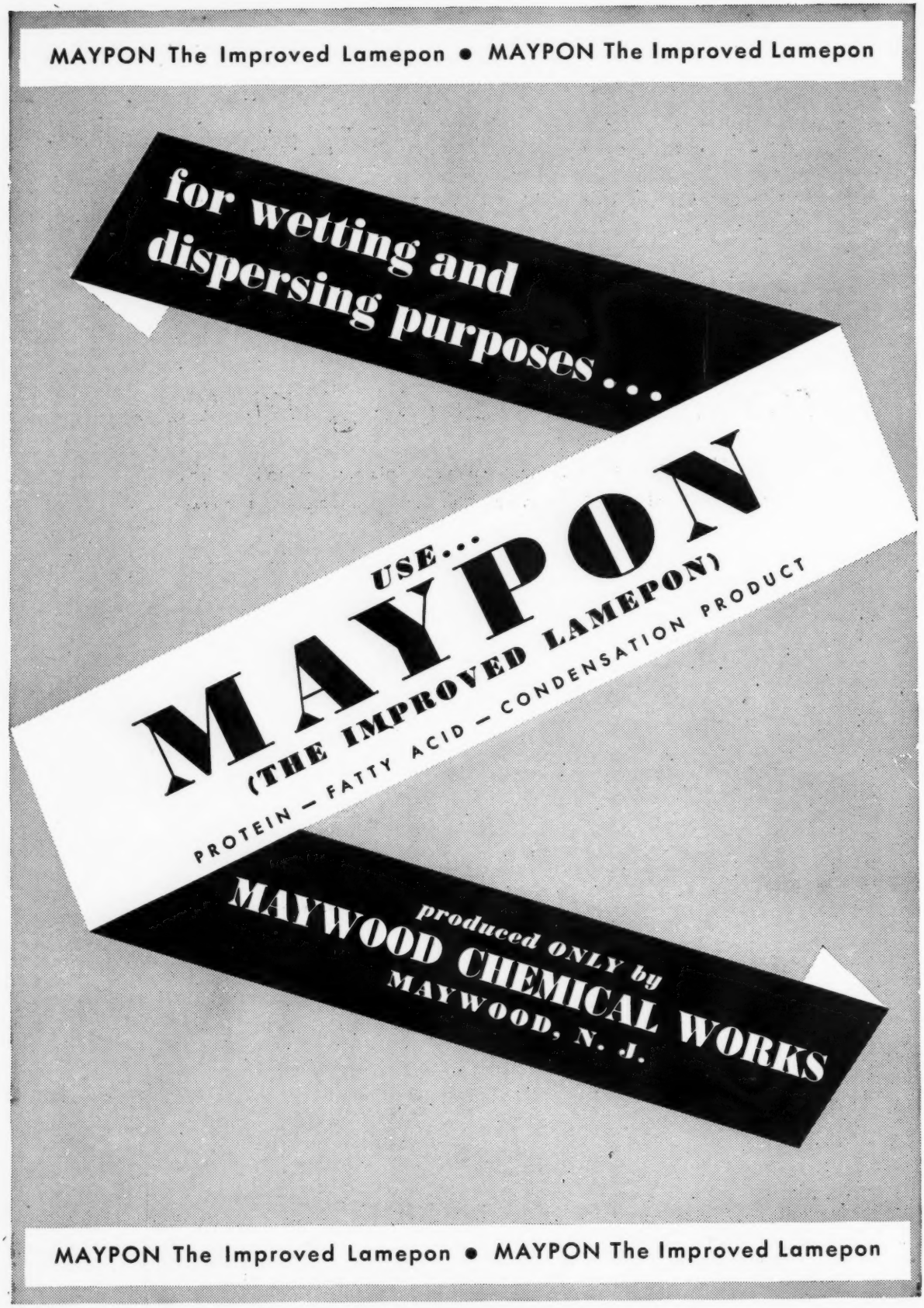
MAYPON The Improved Lamepon • MAYPON The Improved Lamepon
for wetting and dispersing purposes . . .
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PROTEIN — FATTY ACID — CONDENSATION PRODUCT
produced ONLY by
MAYWOOD CHEMICAL WORKS
MAYWOOD, N. J.
MAYPON The Improved Lamepon • MAYPON The Improved Lamepon

LEVELING OFF TO A FAST FINISH . . .
WITH Calcofast*
WOOL DYES!
CALCOFAST wool dyes produce consistently level, uniform shades with excellent fastness properties. Their qualities of good penetration and superior fastness to light, washing, sea water, perspiration, carbonizing, and fulling, make them particularly desirable in fashionable shades for sportswear fabrics, suitings, neckwear, knitting yarns for sweaters or bathing suits, and hosiery yarns.
Ask your Calco representative for full details on this group of metallized dyes for carbonized wool. Our Technical Service Staff will gladly assist you with the application of Calcofast wool dyes. CALCO CHEMICAL DIVISION, AMERICAN CYANAMID COMPANY, Bound Brook, New Jersey. New York, Chicago, Philadelphia, Boston, Charlotte, Providence.
*Trade-mark
Calco

Yes, no matter what fiber or combination of fibers you are using, you will find there's a Laurel Product that will give you exactly the finish you desire.

For over thirty-seven years Laurel has been meeting successfully myriad challenges of leading dyers, bleachers and finishers. From this reservoir of experience and service has come the long line of Laurel processing agents to give you better, more efficient processing for every dollar you spend.

Plan now to get the extra benefits Laurel Soaps, Oils and Finishes impart to your fibers or fabrics. Ask Laurel Technicians for their recommendations on your next processing job.

Laurel Boil-Off Oils and Compounds for more effective degumming of pure silk, rayon and cotton mixtures.

Laurel Emulsions and Softeners for better quality, better knitability, proper conditioning, proper regain.

Laurel Hosiery Finishes for softer, smoother appearance, greater freedom from snags, more wear.

Laurel Nylon Finishes for speedier processing, improved hosiery quality.

Laurel Olamine, cation active softener for exceptionally soft finish on dyed rayons.

Laurel Rayon Oils for faster, softer yarns, improved appearance and hand of your rayon.

Laurel Ruxite Coning Oils for superior lubrication, greater pliability, fewer breaks, higher winding efficiency.

Laurel Rayon Size for smoother, stronger, cleaner, more resilient rayon warps.

Laurel Textile Oil, a favorite of hundreds of customers because of its unusual versatility for improved quality and finish of fiber and fabric.

Laurel Wool Oils for maximum lubrication.

Laurel Wool Scouring Compounds for speedier detergent action, clearer, more even dyeings, cleaner, softer, loftier wool.

Laurel Special Finishes, Water Repellents, Mildewproofing and Flameproofing Compounds.

soaps, oils, finishes

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OFFICES:

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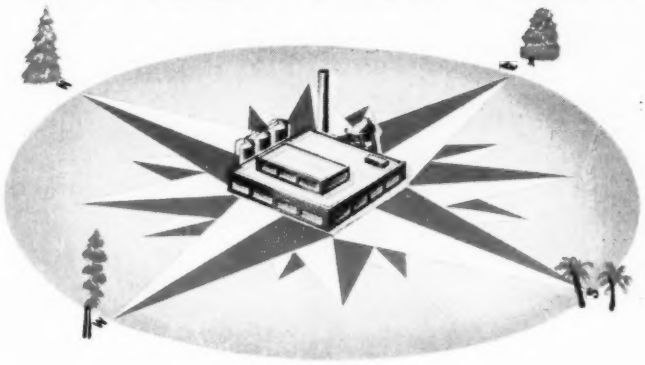
...IN YOUR BACK YARD!



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call on GENERAL CHEMICAL first!

General Chemical Producing Works include:

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Deming, N. M.
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Denver, Colo.
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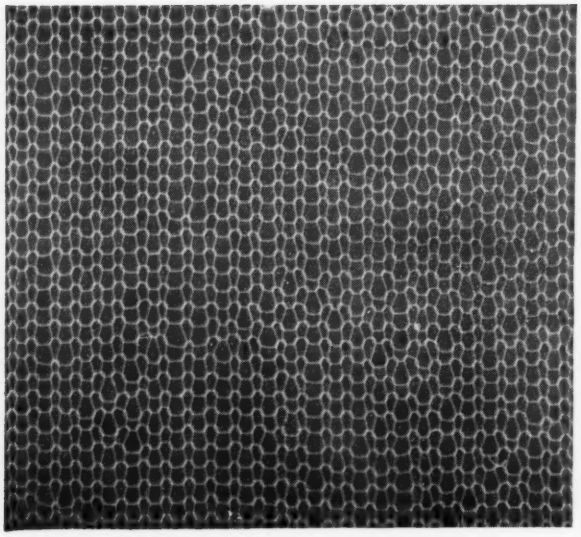
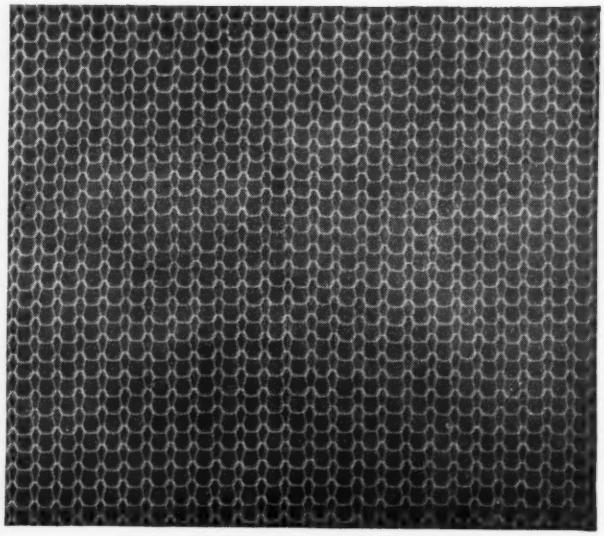
Kōnrite

"TREATS" YARN "RIGHT"!



Here's fabric knit from conventionally treated yarn



Here's fabric knit from KŌNRITE treated yarn

See the Difference?

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- **yields uniform cones.** Its controlled viscosity assures even distribution of oil on the yarn.
- **minimizes stripping of size in knitting.** Reduces press-offs.
- **permits rapid cementing of stitches, resulting in a clear and perfect fabric.**
- **reduces curling.** Increases seaming production.
- **prevents softening in lagged yarn and fabric.**

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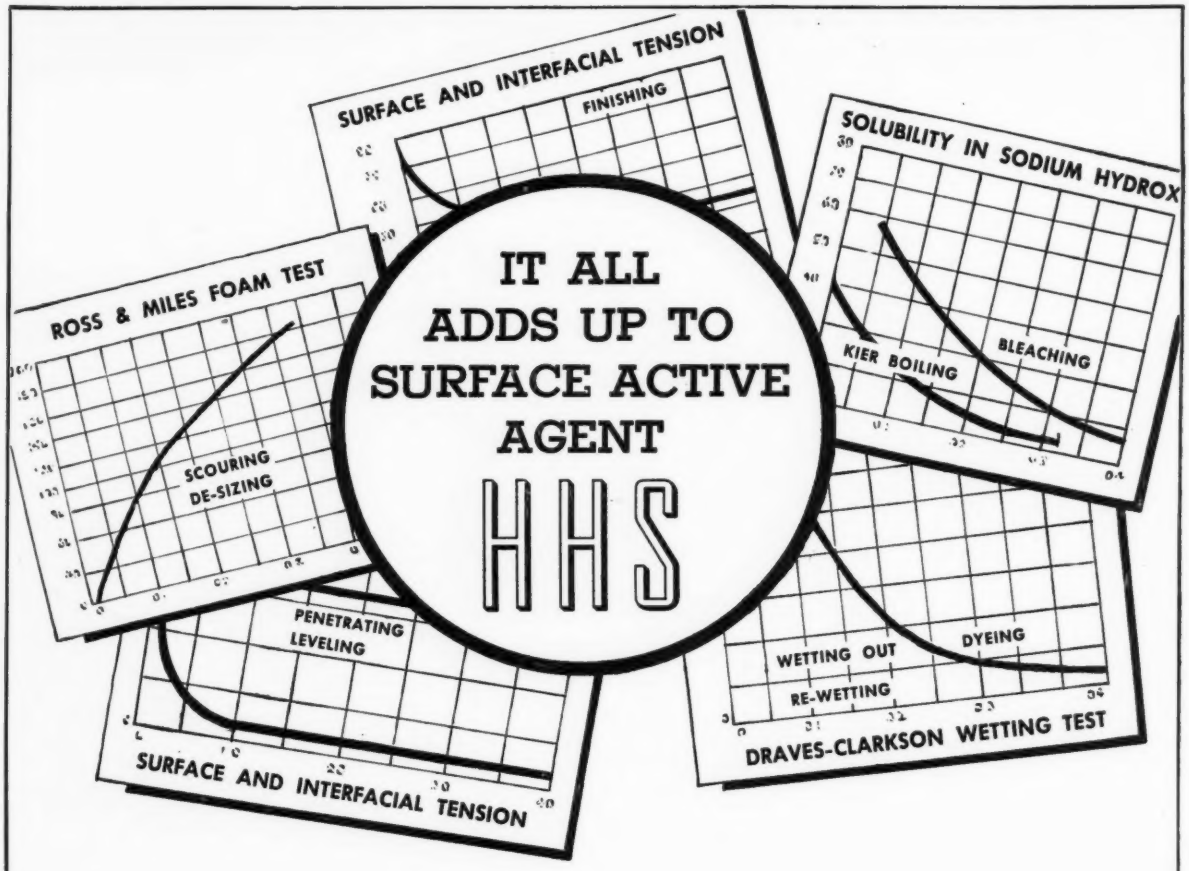

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June 7, 1947

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AMERICAN FINISHING COMPANY
C. F. Goodman, President

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*Patents Pending

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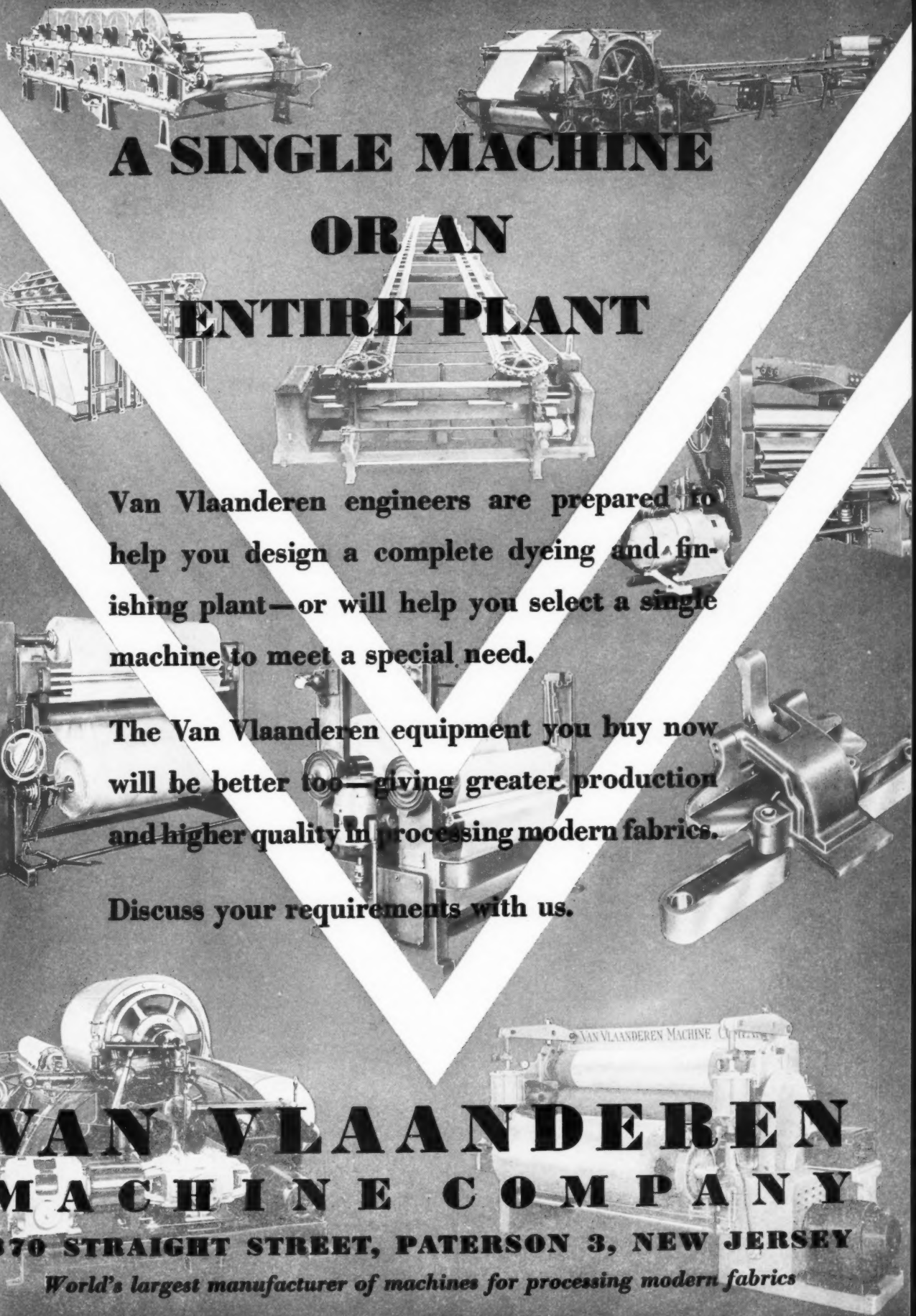
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Gaston County Dyeing Machines are designed and built to do a better job at a lower cost. Advanced automatic controls have thrown a web of safety around every phase of dyeing, from the loading to the unloading of the piers. Guesswork has been completely eliminated, and pre-determined quality assured. Gaston County Combination Beam and Package Machines have established a thirty-year record of flexibility, dependability, and economy that today make them the choice of scores of the world's largest textile mills.

Gaston County features that save time and labor; eliminate costly guesswork and waste...
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Robot Dyemaster Controls provide permanent records for matching colors quickly and perfectly.

GASTON COUNTY
DYEING MACHINE COMPANY

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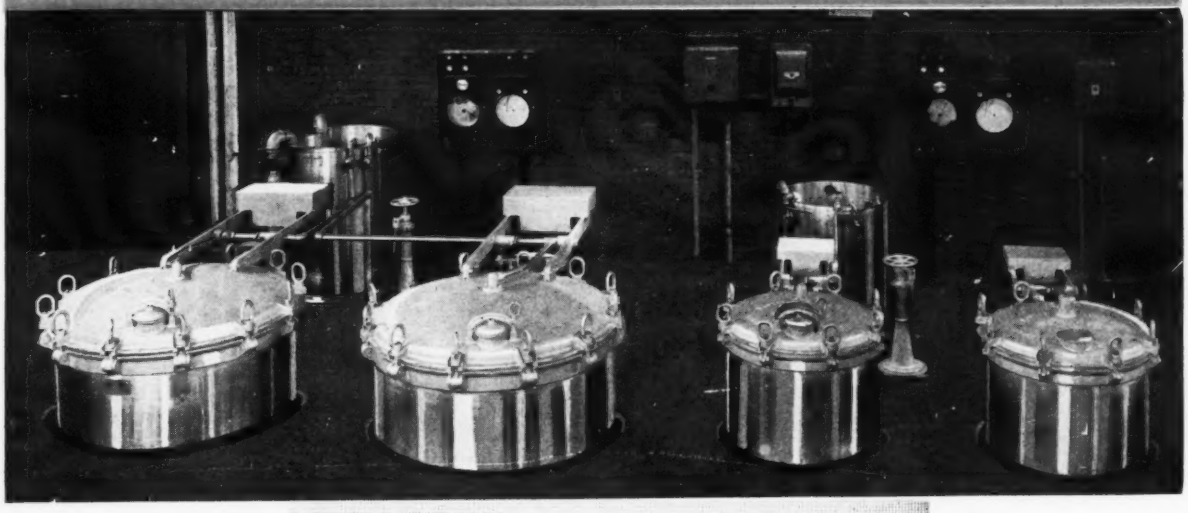

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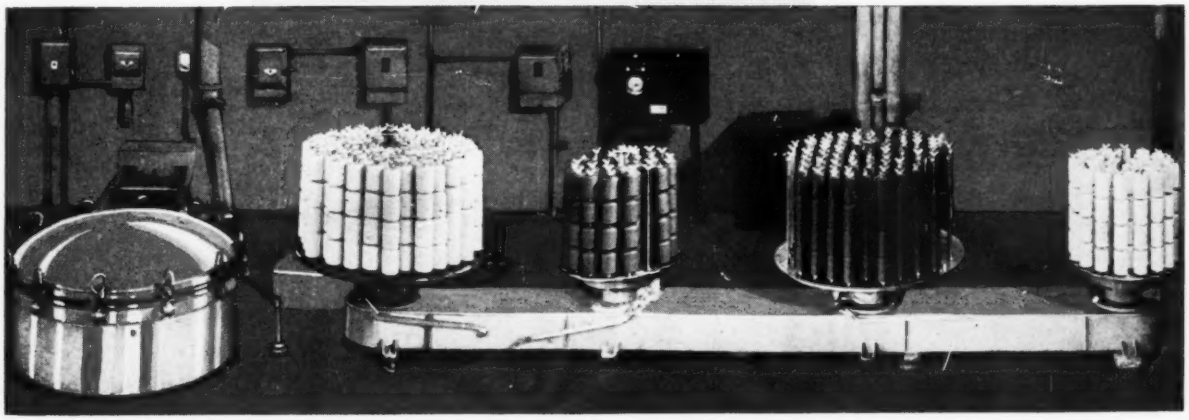

Upper view—Gaston County's "automatically controlled" Package Dyeing Machines. Lower view—Extractor and Dryers.

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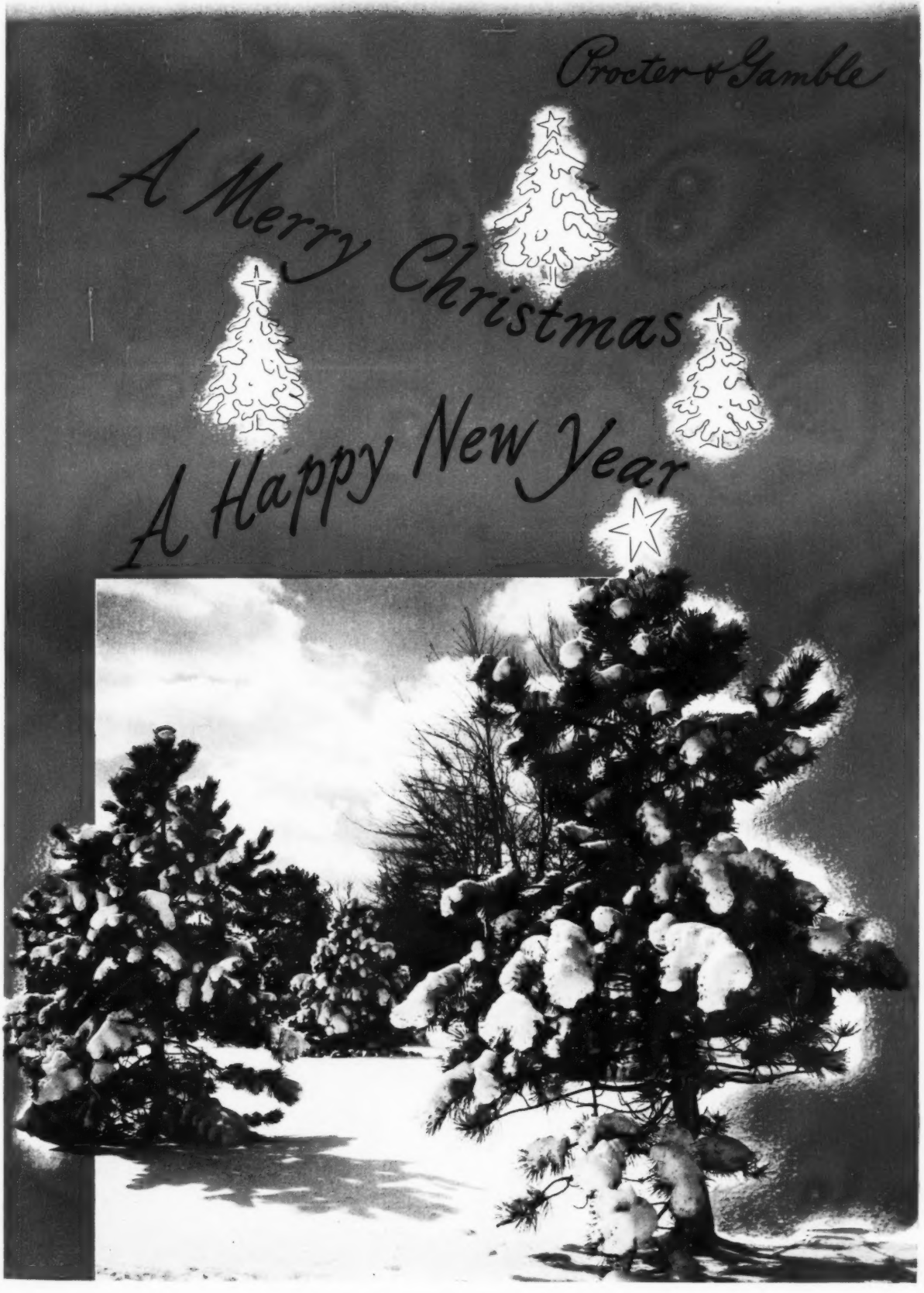
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A Happy New Year

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Annual Processing Review Number

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December 1, 1947
VOLUME 36 NUMBER 24

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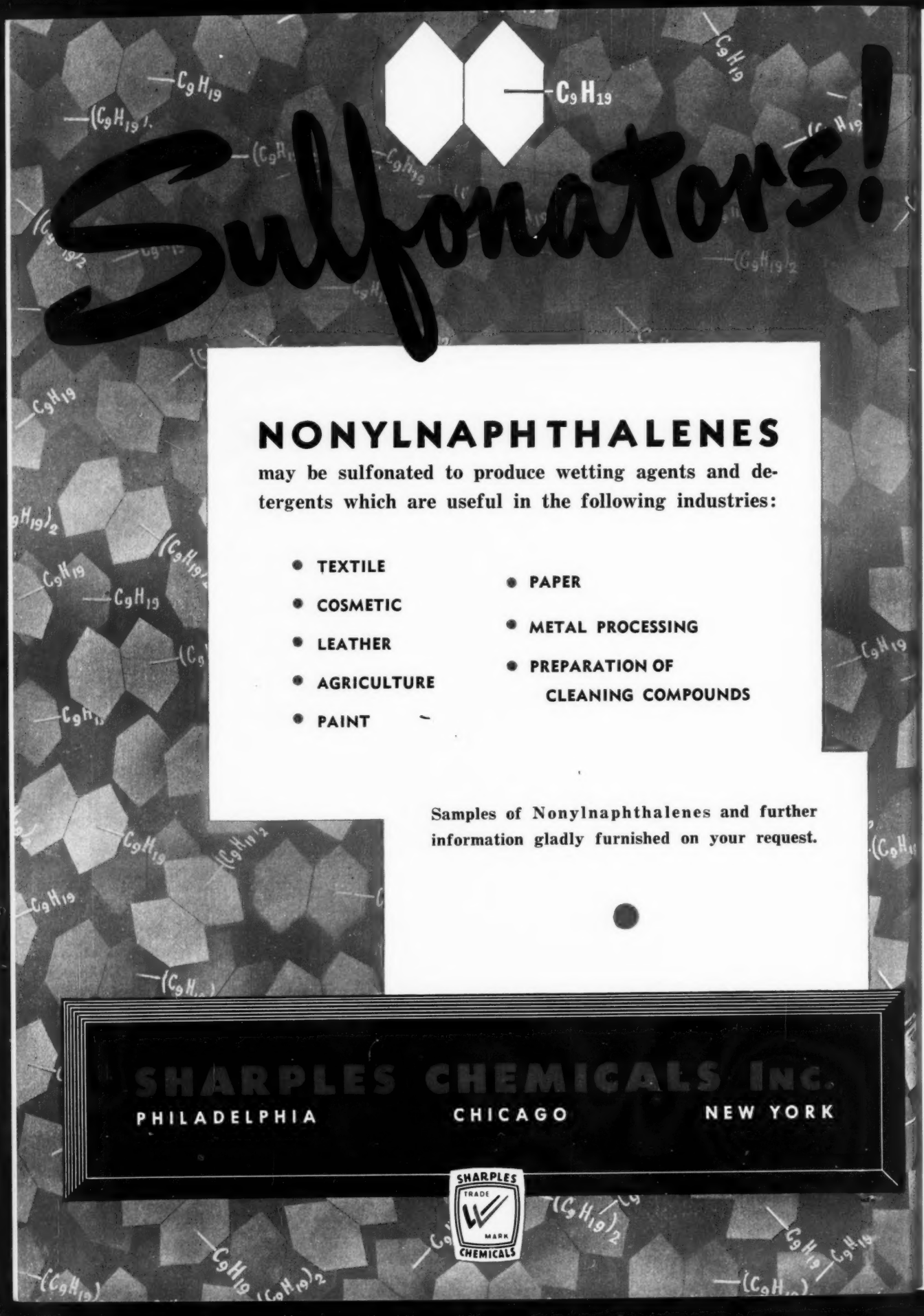
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DYESTUFF REPORTER

VOLUME 36 DECEMBER 1, 1947 NUMBER 24

Alphabetical List of
NEW PRODUCTS
Developed Since November, 1946

DYESTUFFS AND PIGMENTS • TEXTILE CHEMICALS • EQUIPMENT

WITH the cooperation of manufacturers of dyestuffs, textile chemicals, and wet processing and laboratory equipment, we have prepared the accompanying list of products which, it is understood, have been placed on the market or further developed since November, 1946. The list of products has been subdivided according to the classification mentioned and the individual products are listed in alphabetical order. The name of the manufacturer, in an abbreviated form, appears directly below the name of the product. In many cases the abbreviated name of the manufacturer will immediately indicate to the reader the full name of the company. However, appearing below we have listed alphabetically the key name of the manufacturer together with the complete firm name and address.

We have tried to make this list as complete and accurate as possible but there may be some unintentional omissions or errors. If so, we shall be pleased to have such matters called to our attention immediately. We have depended upon the manufacturers to supply us with a complete list of their new products together with information concerning them. The properties claimed for these products are those claimed by the manufacturers. The information which we have published is necessarily in brief form inasmuch as lack of space prohibits the publication of complete details concerning any product. We hope, however, that the information as it appears is sufficiently comprehensive to give the reader a specific idea of the properties and intended uses of the product.

Key to Manufacturers' Names

ALCO—Alco Oil and Chemical Corp., Trenton Ave. & William St., Philadelphia 34, Pa.

AMALGAMATED—Amalgamated Chemical Corp., Rorer and Ontario Sts., Philadelphia 34, Pa.

AMERICAN ANILINE—American Aniline Products, Inc., 50 Union Square, New York 3, N. Y.

ANDERS—Anders Chemical Corp., East Rutherford, N. J.

ARKANSAS—Arkansas Company, Inc., P.O. Box 210, Newark, N. J.

ARMOUR—Armour and Company, Armour Chemical Division, 1355 West 31st St., Chicago, Ill.

ATLANTIC—Atlantic Chemical Co., Inc., 2072 Smith Street, Centredale 11, R. I.

BICK—Bick & Co., Inc., Reading, Pa.

BIRCH—Birch Brothers, Inc., 32 Kent Street, Somerville, Mass.

BLICKMAN—S. Blickman, Inc., Weehawken, N. J.

BOCON—Bocon Chemical Corp., 18 W. 37th St., New York, 18, N. Y.

BURKART-SCHIER—Burkart-Schier Chemical Co., Chattanooga, Tenn.

CALCO—Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J.

CARBIDE AND CARBON—Carbide and Carbon Chemicals Corp., 30 East 42nd Street, New York 17, N. Y.

CIBA—Ciba Company, Inc., Greenwich & Morton Sts., New York 14, N. Y.

COMMONWEALTH—Commonwealth Color & Chemical Co., Nevins, Butler & Baltic Sts., Brooklyn, N. Y.

CONTINENTAL—Continental Chemical Co., 86 Lexington Ave., Passaic, N. J.

DePAUL—DePaul Chemical Co., Inc., 44-27 Purvis Street, Long Island City 1, N. Y.

DEWEY & ALMY—Dewey and Almy Chemical Co., Inc., Cambridge 40, Mass.

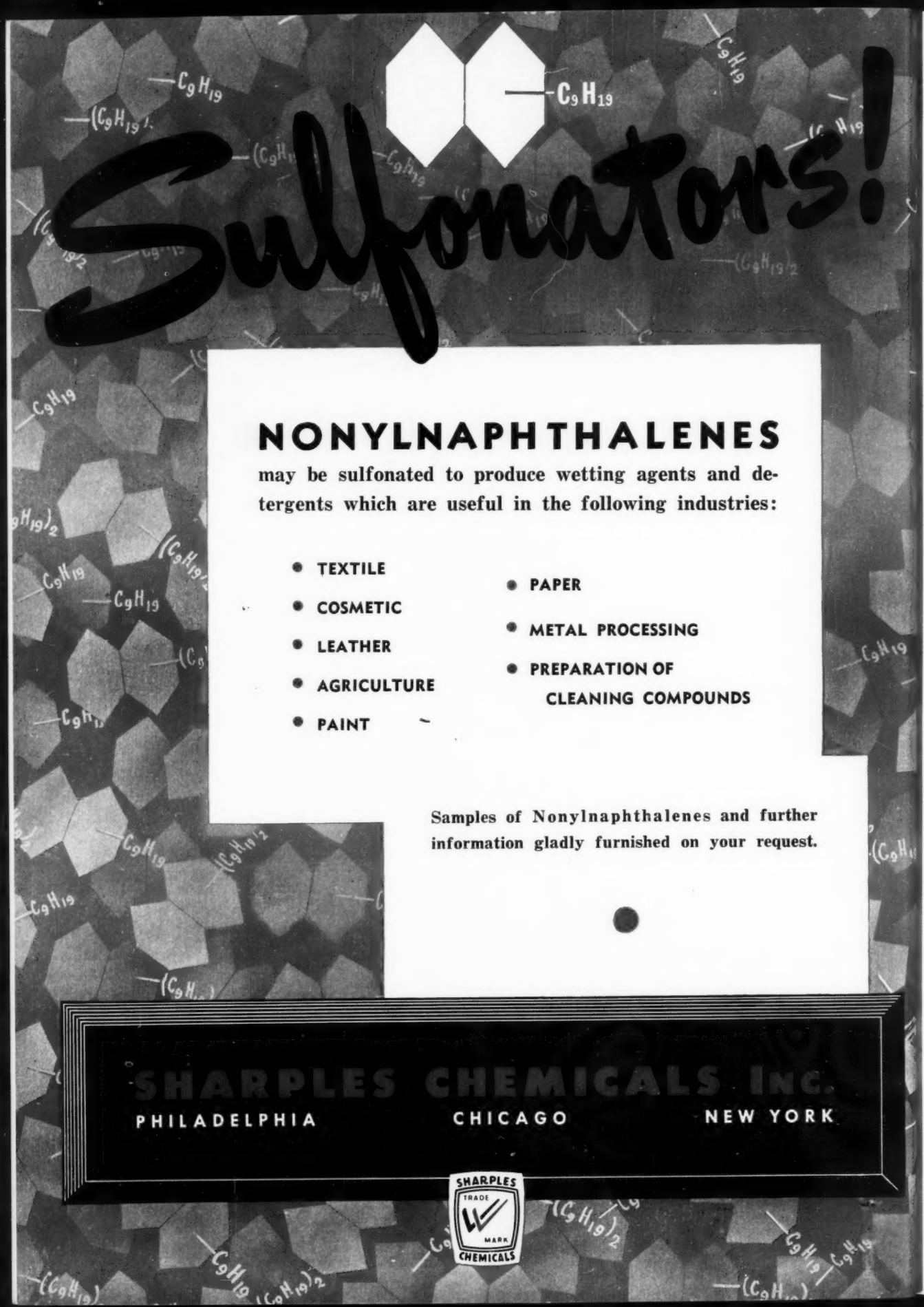
DEXTER—Dexter Chemical Corp., 819 Edgewater Road, New York 59, N. Y.

duPONT—E. I. duPont de Nemours & Co., Inc., Wilmington 98, Del.

EASTMAN—Tennessee Eastman Corp., Kingsport, Tenn.

EMERY—Emery Industries, Inc., 4300 Carew Tower, Cincinnati 2, Ohio.

FANCOURT—W. F. Fancourt & Co., 516-518 South Delaware Ave., Philadelphia, Pa.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DEWEY & ALMY—Dewey and Almy Chemical Co., Inc., Cambridge 40, Mass.

DEXTER—Dexter Chemical Corp., 819 Edgewater Road, New York 59, N. Y.

duPONT—E. I. duPont de Nemours & Co., Inc., Wilmington 98, Del.

EASTMAN—Tennessee Eastman Corp., Kingsport, Tenn.

EMERY—Emery Industries, Inc., 4300 Carew Tower, Cincinnati 2, Ohio.

FANCOURT—W. F. Fancourt & Co., 516-518 South Delaware Ave., Philadelphia, Pa.

GEIGY—Geigy Company, Inc., 89 Barclay Street, New York 8, N. Y.
GENERAL—General Dyestuff Corp., 435 Hudson Street, New York 14, N. Y.
GIRDLER—The Girdler Corp., Inc., Votator Division, Louisville, Ky.
GURLEY—W. & L. E. Gurley, Troy, N. Y.
HART—Hart Products Corp., 1440 Broadway, New York 18, N. Y.
HERCULES—Hercules Powder Co., Inc., Wilmington, Del.
HEYDEN—Heyden Chemical Corp., 393 Seventh Avenue, New York 1, N. Y.
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KALI—Kali Manufacturing Co., 427 Moyer St., Philadelphia 25, Pa.
KEARNY—Kearny Manufacturing Co., Inc., Kearney, N. J.
MAHER—Maher Color & Chemical Co., 355 West Ontario St., Chicago 10, Ill.
MAYWOOD—Maywood Chemical Works, Maywood, N. J.
MONSANTO—Monsanto Chemical Co., Merrimac Division, 140 Federal Street, Boston 10, Mass.
NATIONAL—National Aniline Division, Allied Chemical & Dye Corp., 40 Rector Street, New York 6, N. Y.
NEW YORK—New York Color & Chemical Corp., Inc., Belleville, N. J.
NOPCO—Nopco Chemical Co., Inc., Harrison, N. J.
NUODEX—Nuodex Products Co., Elizabeth F, N. J.
NYANZA—Nyanza Color & Chemical Co., 215 Water Street, New York, N. Y.
ONYX—Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City 2, N. J.
PATENT—Patent Chemicals, Inc., 335 Boulevard, Paterson 3, N. J.
PROCTOR & SCHWARTZ—Proctor & Schwartz, Inc., Seventh St. and Tabor Rd., Philadelphia 20, Pa.
PUBLICKER—Publicker Industries, Inc., 1429 Walnut St., Philadelphia 2, Pa.
QUAKER—Quaker Chemical Products Corp., Conshohocken, Pa.
RICHMOND—Richmond Oil, Soap & Chemical Co., Inc., 1041-43 Frankford Avenue, Philadelphia 25, Pa.
RIGGS & LOMBARD—Riggs and Lombard, Inc., Foot of Suffolk St., Lowell, Mass.
ROHM & HAAS—Rohm & Haas Company, Washington Square, Philadelphia 5, Pa.
ROYCE—Royce Chemical Co., Carlton Hill, N. J.
SANDOZ—Sandoz Chemical Works, Inc., 61 Van Dam Street, New York 13, N. Y.
SCHOLLER—Scholler Brothers, Inc., Collins & Westmoreland Sts., Philadelphia 34, Pa.
SHARPLES—Sharples Chemicals, Inc., 123 South Broad St., Philadelphia 9, Pa.
STANDARD CHEMICAL—Standard Chemical Products, Inc., Hoboken, N. J.
STANDARD FABRICATORS—Standard Fabricators, Inc., 355 Walton Ave., New York 51, N. Y.
STEIN, HALL—Stein, Hall & Co., Inc., 285 Madison Ave., New York, N. Y.
SYNTHETIC—Synthetic Chemicals, Inc., 335 McLean Blvd., Paterson 4, N. J.
TUBULAR—Tubular Textile Machinery Corp., 27 West 20th St., New York, N. Y.
WARWICK—Warwick Chemical Co., Division, Sun Chemical Corp., West Warwick, R. I.

Dyestuffs and Pigments

Algosol Olive Green IB—CF

(General)

Under this name is offered the water soluble leuco-ester of the vat dye Indanthrene Olive Green B. When applied either in dyeing or printing it produces shades and fastness properties corresponding to those of the vat dye. It comes in the form of a dark brown, fine powder with good stability in substance and in solution. It dissolves readily with heating. After application, subsequent treatment converts the soluble leuco-ester into the insoluble vat dye. The resultant shades are said to possess excellent fastness to light, washing and chlorine.

Alizarine Cyanine Green 4G

(Patent)

A new single dyestuff of the acid alizarine series said to possess the valuable properties of this series plus important improved features. It produces a full green shade which, it is claimed, can not be equalled in fastness properties by mixtures of other greens and yellows. It dyes wool from an acid as well as a neutral bath. It is stated that the exhaustion from a neutral bath is extraordinary and surpasses that of general "neutral dyeing". It is further stated that it possesses good solubility and satisfactory levelling properties. It is said to have outstanding fastness properties to washing, fulling, milling, and sea water. It is claimed to be excellent for carpet yarns, woolens, bathing suits, felt hats, etc. It is said to possess very good carbonizing fastness and excellent light fastness. It is stated that the excellent solubility of this product offers a suitable dye for wool package dyeing. It is suitable for use as a shading color in any kind of a dye bath. Its shade is not changed to any considerable degree through chroming. It is suitable for shading purposes in the metachrome and top chrome processes.

Alizarine Light Blue 5GL Pat.

(Sandoz)

A new homogeneous acid alizarine dyestuff having similar fastness and level dyeing properties to Alizarine Light Blue 4GL. However, the newer 5GL type is considerably greener and brighter in tone than the older brand; and likewise it is suitable for dyeing piece goods, yarns and carpet yarn.

It is said to be eminently adapted to the dyeing of fur and wool felt by reason of its even rate of exhaustion, penetrating qualities and fastness to water and acid milling.

Amalan Bordeaux R
Amalan Black WA EX.

(American Aniline)

Two new additions to the Acid-Metallized group of colors which are said to be recognized for their all around good resistance to those agents of destruction as applied to ordinary acid dyeing colors. Like their earlier counterparts, these new Amalans are applicable to wool, silk, leather and some of the synthetic fibers.

Amanthrene Brown RRD Powder

(American Aniline)

Like the paste, this product is a rich, red shade of brown which is particularly recommended as a supra fix item for the printing of cotton and rayon as well as for the dyeing of these fibers by the vari-

ous methods. Its finely divided powder particles which readily disperse and produce smooth print pastes is said to offer a distinct storing advantage over the ordinary paste form.

Amanthrene Grey BR Double Paste

(American Aniline)

A new grey of pleasing neutral tone suitable for printing as well as for use on cotton and rayon by the several methods of vat application.

Amanthrene Grey BR Double Powder

(American Aniline)

A readily dispersible item identical in tone and character with the Double Paste and equally suited to dyeing and printing. Both products are said to rate high in fastness to light, washing, chlorine and peroxide bleach.

Amanthrene Orange RP Paste

(American Aniline)

A rich, full toned orange especially developed for printing, although it may be stock vatted and dyed. The product is said to offer a high rate of fastness to light, washing, soda boil, chlorine and peroxide bleach.

Amanthrene Pink FF Paste

(American Aniline)

A vat pink of distinction suitable for the printing of cotton and viscose as well as for dyeing these fibers after stock vatting the color. The product is said to possess very good resistance to those color destroying influences to which this type of color is normally subjected.

Andotex* Colors

(Anders)

Andotex colors are emulsion type pigment printing colors. They are said to give prints of considerable fastness to washing, light, and crocking on cottons, rayons, acetates, and other synthetics. Prints are simply dried and briefly exposed to temperatures of 260° F. to 375° F. No other after treatment is necessary. The following are available:

Andotex Black J
Andotex Blue G
Andotex Blue R
Andotex Green B
Andotex Navy
Andotex Orange
Andotex Pink
Andotex Red B
Andotex Red N
Andotex Red Y
Andotex Violet R
Andotex White
Andotex Yellow G

* Registered Trade Mark

Bixacid* Fast Light Yellow G

(Bick)

This is a sulfuric acid dyeing wool color which is said to have excellent level dyeing and light fastness properties. It is stated that its perfect solubility and penetration and exhaust makes it very desirable for dyeing wool. It is recommended by the manufacturers for high grade worsted piece goods, carpet and fancy sweater yarns and hat felts.

* Registered Trade Mark

Bixacyl* Brilliant Blue B Conc 200%

(Bick)

This is a dispersed type of dye which is said to produce clear, bright shades of blue on acetate rayon and nylon. It is stated that it disperses well and is very level dyeing which warrants its use in all types of dyeing equipment for acetate rayon and nylon.

* Registered Trade Mark

Bixamine* Catechine G

(Bick)

This produces a more red shade of brown on cotton and rayon than Bixamine Catechine 3G Conc. This product is used extensively on all types of cotton as a self shade or in combination to produce brown. It is claimed that it possesses excellent solubility and is level dyeing in various types of dyeing equipment.

* Registered Trade Mark

Bixamine* Catechine 3G Conc 200%

(Bick)

This is a direct dyeing color for cotton and rayon. It produces shades of yellowish brown and is extensively used for the production of mode shades on all classes of cotton materials. It is stated that the excellent solubility of this color warrants its use for application in all types of dyeing equipment. It is satisfactory for padding application.

* Registered Trade Mark

Bixamine* Fast Brown 5GLL

(Bick)

This is a new homogeneous dyestuff which, by its shade and fastness properties, supplements to advantage Bixamine Fast Brown BRLL. On cotton, linen, rayon and spun viscose, yellowish brown shades are obtained in a fastness to light which, it is claimed, was hitherto unobtainable with a homogenous dyestuff. On mixed fabrics and yarns of cotton and viscose or spun rayon very good tone-in-tone shades are obtained. Good solubility permits its use in all types of machines. Dyeings on silk possess good fastness to light and water. Cotton and silk in half silk fabrics are dyed practically the same depth of shade from a neutral bath. In fiber mixtures of wool and cotton or spun rayon, the vegetable fibers are dyed deeper than the wool.

* Registered Trade Mark

Bixamine* Fast Brown 3RL

(Bick)

This is a new direct dyestuff recommended by the manufacturers for cotton and rayon, where excellent light and wash fastness properties are required. It is said to be very level dyeing in all types of dyeing equipment and is readily soluble. It produces a desirable shade of brown for draperies, cotton half hose and piece goods.

* Registered Trade Mark

Bixasol* Milling Red B

(Bick)

This finds its greatest use in dyeing bathing suits and knitting yarns where its brilliancy of shade and fastness to the customary salt water tests are of prime interest. It is also suitable alone and in combination for dyeing many other types of woolen and silk fabrics for which these characteristics recommend it. It is said to be an excellent neutral dyeing color for shading wool in cotton-wool unions.

* Registered Trade Mark

Bixasol* Milling Red G

(Bick)

This produces more scarlet shades on wool than Bixasol Milling Red B. It is

stated that it is very level dyeing, penetrates satisfactorily and exhausts well. It is satisfactory as a self shade or combinations for dyeing wool and silk where salt water fastness is of prime interest. It is claimed that it is an excellent neutral dyeing color for shading wool in cotton-wool unions.

* Registered Trade Mark

Calcotone Pigment Pastes

(Calco)

Calcotone Yellow G Paste
Calcotone Yellow M Paste
Calcotone Orange R Paste
Calcotone Red 3B Paste
Calcotone Red MB Paste
Calcotone Pink FF Paste
Calcotone Scarlet Y Paste
Calcotone Violet R Paste
Calcotone Blue G Paste
Calcotone Blue R Paste
Calcotone Green G Paste
Calcotone Green M Paste
Calcotone Red Brown DK Paste
Calcotone Brown BB Paste
Calcotone Black Paste
Calcotone White T Paste

Calcotone Pigment Pastes are stabilized aqueous dispersions of pigments for general use with various water-soluble binders. These colors are being used for low-cost printing of cotton and specialty textile lines where pigment colors are required, such as: jute, rayon, glass fiber, mixed fibers, asbestos and paper. They are also recommended by the manufacturer for the printing of fabrics which are to be coated with vinyl resins.

In those cases where the cost and fastness properties are the governing factors, the manufacturer offers a special line of Calcotones. Many miscellaneous uses have been found for the following special low-priced dispersed pigments:

Calcotone Orange 2R Paste
Calcotone Red B Paste
Calcotone Red PR Paste
Calcotone Violet B Paste

Calcotex Bases

(Calco)

Resin pigments designed for use in water and oil emulsion systems. It is stated that they have been selected for their bright shades, excellent fastness and printing properties. These pigments are used principally for textile printing alone or in conjunction with stabilized azoic or naphthol dyes.

Calcotex Red 3BLC Base
Calcotex Red 3B Base
Calcotex Pink FF Base
Calcotex Pink FFLC Base
Calcotex Yellow G Base
Calcotex Yellow 2CLC Base
Calcotex Green G Base
Calcotex Green GLC Base
Calcotex Blue G Base
Calcotex Blue GLC Base
Calcotex Reduction Conc.

Note:—It is stated that the series having the "LC" (low crock) as a suffix, represent a group displaying results which are considerably faster to crocking, especially in heavy shades, than the regular bases.

The Calcotex Reduction Conc. is a concentrated reduction to be used with both the regular and low-crock series.

Chlorantine Fast Blue 5GLL
Chlorantine Fast Blue BLL
Chlorantine Fast Blue 7RLL

(Ciba)

A new series of fast to light direct dyeing blues that are said to retain their fastness after urea formaldehyde resin finishing.

Chlorantine Fast Orange 3GL

(Ciba)

A new and versatile direct color said to be fast to washing, to reserve acetate and nylon, and to discharge neutral to a pure white. Of particular interest, it is stated, is the excellent light fastness after urea formaldehyde resin finishing.

Chromacyl* Orange 2G (Pat.)

(Du Pont)

Shades with unusual fastness to light are said to be derived from Chromacyl Orange 2G (Pat.). This special acid dye has a rich body tone with a golden overcast and is of interest for high style coloring on woolens and worsteds, especially women's wear. It is also recommended by the manufacturer for carpet yarns.

Chromacyl Orange 2G (Pat.), in addition to its exceptionally good light fastness, has very good resistance to perspiration, hot moist pressing, water spotting and crocking. It is said to dye levelly, to penetrate thoroughly, to exhaust slowly and to show good transfer at the boil. It can be applied in all types of dyeing equipment and is unaffected by metals.

When Chromacyl Orange 2G (Pat.) is applied from an acetic acid bath to mixed fiber fabrics, silk and nylon are dyed lighter than wool, cotton is stained a trace while viscose-process and acetate rayon are left white.

* Registered Trade Mark

Chromacyl* Orange GE

(Du Pont)

Said to produce Indian Orange shades which exhibit excellent fastness to light in pastel as well as full strength dyeings. It is said to show good resistance to normal wet processing treatments and to have good fastness to cold and salt water spotting, hot moist pressing, dry cleaning, mild fulling and washing.

Chromacyl Orange GE has excellent solubility both hot and cold. It is stated that, although it exhausts rapidly, the redistribution rate is high so that level, well penetrated, non-selective dyeings result. This color can be used in all types of dyeing equipment since the shade is practically unaffected by brass or iron.

Chromacyl Orange GE is a good component for use with other Chromacyl types for shading browns and tans and is recommended for carpets, worsted suitings, dress goods, sportswear, and other outerwear materials. Nylon and silk effect threads are dyed somewhat weaker than wool while cotton, viscose-process rayon and acetate rayon are left white.

* Registered Trade Mark

Chromacyl* Orange R

(Du Pont)

Said to possess very good fastness to light, dry cleaning and good resistance to perspiration and pressing, Chromacyl Orange R is particularly suitable for application to wool, worsted piece-goods and yarns either in self-shades or in combination for suitings, bathing suits, sportswear and heavy outer garments. It is also of interest in the dyeing of carpet yarns for use in the production of domestic and oriental rugs.

The wash and other wet fastness properties of Chromacyl Orange R are said to closely approach those of the chrome colors. It is said to have very good fastness to carbonizing, dry and wet stoving, cold and salt water spotting and good fastness to fulling and washing.

Chromacyl Orange R is further said to be level dyeing, to have good solubility and to penetrate satisfactorily. Its high neutral dyeing affinity makes it of interest for shading purposes in dyeing union goods. Dyeings can be made in all types of equipment since brass, iron and Monel have only a negligible effect on the shade. In acid baths, it has a slow, uniform exhaust, good transfer at the boil and is not selective. Dyed neutral, viscose-process rayon and cotton effects are stained very slightly. Nylon effect threads are dyed stronger than wool while those of pure silk are dyed similar to wool.

* Registered Trade Mark

Cibanone Brown BR Powder

(Ciba)

A level dyeing vat brown of good tinctorial value for making dark browns said to be of excellent all around fastness.

Cibanone Golden Orange 3G Micro Powder

(Ciba)

A yellowish orange vat color said to be of excellent all around fastness and applicable to cotton filament and spun rayon, yarn and piece. It is said to be especially suitable as a component color with Cibanone Brown BR, GR, BG and Cibanone Olive 2R.

Cibanone Yellow 5GK Micro Powder and Micro Paste

(Ciba)

A new vat color bright greenish yellow in shade and said to be particularly suited as a component for brilliant greens in combination with Cibanone Brilliant Greens. Both of the above types are recommended by the manufacturers for printing. Dyeings of the Micro Powder are said to possess excellent fastness to washing, milling, chlorine and kier boiling and to withstand peroxide and combined peroxide-chlorine bleaching.

Cuprofix Navy Blue SL

(Sandoz)

The latest addition to the line of Cuprofix Colors which produces navy shades on cotton or rayon said to be of very good fastness to washing at temperatures up to 140°F. It is also said to produce excellent fastness to light, perspiration, cold water, hot wet pressing and crocking, which makes it of interest for high grade hosiery, knit goods and other washable wearing apparel.

Cuprofix Yellow GLE

(Sandoz)

Cuprofix Yellow GLE is the brightest and greenest of the yellows in this new line of colors. It is said to have good fastness to light and washing, while fastness to perspiration, cold water, crocking and hot wet pressing is rated excellent. It is stated that the color is very stable to urea-formaldehyde treatments and actually improves slightly in fastness to light.

It is also reported that as an ordinary direct color, that is, without the Cuprofix aftertreatment, the color is distinguished by the pure white discharges it yields with both neutral and alkaline hydrosulfite pastes.

Acetate effects are left white.

Diamine Brown 3GN Conc. CF

(General)

A homogeneous direct dyestuff which produces bright yellowish brown shades on rayon, cotton and other vegetable fibers as well as on mixed fabrics. In fastness properties the product is not distinguished from most direct colors. It is sufficiently free from copper and manganese to be suitable for rubberizing.

Du Pont Anthraquinone Blue 2GA (Pat.)

(Du Pont)

Good fastness to light, alkali, perspiration, and salt water are said to be features which make the greenish-blue shades of Du Pont Anthraquinone Blue 2GA (Pat.) excellent for women's wear, bathing suit yarns and carpet stock. Because of its level dyeing properties, this color is recommended by the manufacturer for shading tans, browns and greens.

It is stated that Du Pont Anthraquinone Blue 2GA (Pat.) will withstand a mild fulling, has good solubility and is suitable for application to yarns and piece-goods by the usual methods.

Brass fittings in dyeing equipment will have a tendency to dull the true shade somewhat, but neither iron nor Monel exert objectionable effects.

Effect threads of cotton, acetate and viscose-process rayon are left unstained while nylon is dyed approximately the same shade as wool. Its affinity for tin-weighted and pure silk is moderate.

Du Pont Naphthanil* G

(Du Pont)

An azoic prepare designed for the production of yellow shades on yarn and piece-goods when coupled with suitable Naphthanil bases or stabilized Naphthanil diazo salts. Greenish to reddish tones are obtained when coupled with Du Pont Napththanil Diazo Scarlet GG, Du Pont Napththanil Diazo Red RC or Du Pont Napththanil Red KBH. It is applied to both cotton and viscose-process rayon piece goods by padding, producing shades said to have good fastness to light and very good fastness to washing and peroxide bleaching. The fastness to crocking is reduced by a water-repellent treatment with Zelan AP.

Level shades on piece goods are readily produced in continuous dyeing with Du Pont Naphthanil G, because of its low substantivity. When desirable, the exhaustion can be increased by the addition of Glauber's salt in amounts up to 4 ounces per gallon. Formaldehyde should not be used in the prepare bath as it destroys the coupling power. Greener and brighter shades are produced on yarn after coupling by a treatment for 30 minutes at the boil with 0.5 ounce per gallon of soap and 0.07 ounce per gallon of Du Pont Hydrosulfite Conc. In order to produce clear, vivid shades with the Napththanil salts and bases, development must take place in a dilute acetic acid bath at approximately 60°F.

* Registered Trade Mark

Eastone Brown 2R*

(Eastman)

Eastone Brown 2R is a straight, direct acetate brown which dyes acetate rayon a reddish brown, and nylon a slightly duller shade. The unique shade and fastness properties of this color are said to offer the dyer a valuable color for shading and for producing deep tertiary shades on a wide variety of fabrics which must meet certain fastness requirements.

Eastone Brown 2R is a highly dispersed color which is said to exhaust well at either high or low temperatures, and is recommended for both jig and box dyeing. Due to its good dischargeability, deeper shades of this dye can be obtained for roller printing. It is claimed it is one of the fastest acetate dyestuffs available with respect to washing, and is highly resistant to atmospheric fading, light, perspiration, and sunlight.

It is highly recommended by the manufacturers as the base color in formulating lining shades in conjunction with the gas-resistant azo blues.

* Reg. U. S. Pat. Off.

Erio* Anthracene Rubine 3 G P

(Geigy)

A new level dyeing acid color said to possess very good resistance to light and moderately good fastness to washing.

* Registered Trade Mark

Erio* Chromal Orange M L

(Geigy)

A true metachrome dyeing orange said to possess outstanding fastness to light. It also works well as a topchrome color. The fastness to fulling, washing, stoving and carbonizing is said to be very good.

This product also is said to be excellent for the dyeing of "tippy" wool.

* Registered Trade Mark

Erio Chrome* Brown 3 G L

(Geigy)

A yellow shade of brown said to possess good light fastness and other all around good fastness properties when used via the meta or top chrome methods. One of the outstanding features of Erio Chrome Brown 3 G L is said to be the unusual ability to hold its shade in artificial light making an excellent base color for brown shades.

* Registered Trade Mark

Fast Blue Salt BN

(General)

The stabilized diazo compound of dianisidine (Fast Blue B Base). Its use greatly simplifies and facilitates the preparation of the developing liquor in the application of Naphtols. Because of its good solubility (2½ lbs. per gallon) it is applicable in most types of dyeing equipment. Solutions as well as print pastes made from Fast Blue Salt BN possess good stability.

Fast Scarlet Salt G

(General)

The diazotized and stabilized Fast Scarlet G Base. It is soluble in water and couples directly with Naphtolates to form insoluble Naphtol colors. The use of Fast Color Salts in Naphtol application relieves the dyer or printer of the necessity of diazotizing the bases and greatly simplifies the preparation of developing liquors and print pastes. It is sufficiently soluble (1 lb. per gallon) to be applicable in all types of dyeing equipment. The method of development depends upon the Naphtol being used and the equipment available.

Indanthrene Brilliant Orange RKA Paste for Printing

(General)

The printing standardization of the familiar dyeing type prepared in the form of a smooth, non-settling, grit free paste. When made up and applied in the usual manner it fixes well, producing bright orange shades. The value of this product is said to be further enhanced by very good fastness to chlorine and washing.

Indanthrene Printing Violet 4RN Extra Paste

(General)

The printing modification of the vat dye Indanthrene Brilliant Violet 4R. It is specially standardized for printing, finely dispersed, of medium consistency and free from grit. It fixes well on cotton and rayon, and produces fairly bright shades said to possess very good fastness to light, chlorine and washing.

Interchem* Acetate Bordeaux B

(Interchem)

A highly dispersed dye for both cellulose acetate rayon and nylon. When dyed on acetate rayon, it produces a bright bordeaux shade. On nylon, the shade is much bluer than on acetate rayon. It can be employed as a self-shade and for producing compound shades. This dye can be applied either on jigs or boxes. It is dischargeable with zinc formaldehyde sulfoxylate. It is suitable also for application printing.

* Registered Trade Mark

Interchem* Acetate Brown R

(Interchem)

A highly dispersed dye for both cellulose acetate rayon and nylon. When dyed on acetate rayon, it produces a neutral brown shade. On nylon, the shade is redder. It can be employed for producing browns and tans. This dye can be applied either on jigs or boxes. It is not dischargeable with zinc formaldehyde sulfoxylate. It is not recommended for application printing.

* Registered Trade Mark

Interchem* Acetate Red RN

(Interchem)

A highly dispersed dye for both cellulose acetate rayon and nylon. When dyed on acetate rayon, it produces a brilliant red shade. On nylon, the shade is much bluer. It can be employed as a self-shade and for producing compound shades. This dye can be applied either on jigs or boxes. It is dischargeable with zinc formaldehyde sulfoxylate. It is suitable also for application printing.

* Registered Trade Mark

Interchem* Acetate Rubine 3B

(Interchem)

A highly dispersed dye for both cellulose acetate rayon and nylon. When dyed on acetate rayon, it produces a bluish red shade. On nylon, the shade is much bluer. It can be employed as a self-shade and for producing compound shades. This dye can be applied either on jigs or boxes. In light and medium shades it is dischargeable to a clear white with zinc formaldehyde sulfoxylate. It is suitable also for application printing.

* Registered Trade Mark

Interchem* Acetate Scarlet GC

(Interchem)

A highly dispersed dye for both cellulose acetate rayon and nylon. When dyed on acetate rayon, it produces a scarlet shade with a yellowish cast. On nylon, the shade is much bluer. It can be employed as a self-shade and for producing compound shades. This dye can be applied either on jigs or boxes. It is dischargeable with zinc formaldehyde sulfoxylate. It is suitable also for application printing in light and medium shades.

* Registered Trade Mark

Milling Fast Red RS

(Nyanza)

Milling Fast Red RS is a new addition to the line of Milling Fast Reds. It produces a bright scarlet intermediate in shade between Milling Fast Red GL Conc., and Milling Fast Red R Conc.

Milling Fast Red RS is said to be distinguished by its excellent solubility and is, therefore, particularly recommended for machine dyeing.

Milling Fast Red RS is recommended by the manufacturers for dyeing yarns for bathing suits, raw stock, piece goods and in all cases where good fastness to washing, light, perspiration and salt water are required.

Milling Fast Red RS is also said to be an excellent color for shading chrome colors as it undergoes practically no change in shade on chroming.

National Diazine Brilliant Brown 8G

(National)

A direct dye which, when diazotized and developed with National Developer Z, produces yellowish brown shades said to be of very good fastness to washing, perspiration, acid spotting, water, sea-water, cross-dyeing, peroxide bleaching and rubbing.

National Diazine Orange RFW

(National)

An orange direct dye which, when

diazotized or developed with National Developer B, yields brilliant reddish orange shades said to be of good fastness to cross dyeing and mercerizing and very good fastness to washing, organic acids, perspiration, sea-water and water spotting. It discharges to a good white.

National Erieform Brown RRF

(National)

A reddish-brown direct dye for formaldehyde aftertreatment. Said to possess good fastness to washing, fulling, acids and rubbing and very good fastness to perspiration, water, sea-water and cross dyeing.

National Fast Brilliant Crimson RB

(National)

A new acid red said to be of good solubility, fair level dyeing and good fastness to washing, rubbing and perspiration; very good fastness to water, alkalies, seawater, water spotting and staining. A particularly valuable dye for coloring carpet yarns.

National Fast Light Orange PO

(National)

A level dyeing acid orange said to be of good fastness to light, rubbing and perspiration and very good fastness to carbonizing, cross dyeing and water spotting.

National Solantine Orange EGL

(National)

A readily soluble, well levelling direct orange said to be of very good fastness to light, mercerizing, acid spotting and rubbing and good fastness to perspiration, water and sea-water. It is well adapted for cold dyeing and on unions it stains animal fibers but slightly and leaves acetate practically unstained.

Omega Chrome Fast Blue 2G

(Sandoz)

A new homogeneous chrome dyestuff reported to possess extreme fastness to light, washing, milling, carbonizing and decatizing. The dyestuff produces bloomy, greenish navy blue shades with a beautiful greenish indigo cast in artificial light. In pale shades the pure greenish tone offers opportunity for pleasing grey and pearl shades. The color is said to be especially adapted for dyeing of loose wool or worsted top.

The color is applied either by the afterchrome or chrome mordant method. It is stated that, because of its excellent solubility, it is especially good for vigoreaux printing.

Palatine Fast Blue 5RNA—CF

(General)

A metallized acid dyestuff which is said to possess, like the other Palatine Fast colors, fastness properties closely approaching those of the chrome colors. Since the shade of Palatine Fast Blue 5RNA—CF turns much redder under artificial light, the product will be found useful for producing this effect in combination shades.

Ponsol* Brown RBT Paste

(Du Pont)

Said to produce cocoa brown shades having outstanding fastness to light and very good resistance to washing, chlorine, crocking and cold and salt water spotting. It also exhibits good fastness to hot moist pressing, perspiration and dry cleaning.

Ponsol Brown RBT Paste is a good base for chocolate and cocoa browns and is a suitable shading component for numerous mixtures. It is especially well adapted to use on cotton and viscose rayon materials for sportswear and upholstery and drapery fabrics since it will withstand long exposure to light. Because of its very good fastness to washing, it is also recommended by the manufacturer for use on shirtings and uniform cloths which must be laundered frequently.

This vat color is said to give excellent results by pad-jig application as well as by the Du Pont Pad-Steam Continuous Dyeing Process and can also be used in package or circulating type dyeing machines.

* Registered Trade Mark

Ponsol* Golden Orange 3G Paste

(Du Pont)

Said to produce rich, fast-to-light and fast-to-washing yellowish shades of orange on all forms of cotton and viscose-process rayon and is equally important as a shading element in producing khakis, browns and olives.

Ponsol Golden Orange 3G Paste is said to have very good resistance to severe washing and chlorine, making it of particular interest for use in play suits, and wash dresses and also for work clothing and waitress' uniforms which are subjected to frequent commercial laundering. Its fastness to light is of major importance in the dyeing of upholstery fabrics and draperies. This color is suitable for application by conventional methods in all types of dyeing equipment and also by the Du Pont Pad-Steam Continuous Dyeing Process. It can also be used for printing where an orange possessing generally good fastness is required.

It is stated that the very good chlorine fastness of Ponsol Golden Orange 3G recommends it for dyeing yarns which are woven and bleached in the piece.

* Registered Trade Mark

Ponsol* Red Brown RB Paste

(Du Pont)

Said to provide an economical reddening element for shading a wide range of light-fast browns. Because of its reddish-blue cast and good tinctorial strength, it can be used in the production of chocolate shades. In addition to very good light fastness, it is said to show good resistance to peroxide bleaching and very good fastness to washing and chlorine.

Ponsol Red Brown RB Paste is suitable for application to all forms of cotton and rayon. It has a medium rate of exhaust and very good levelling and penetrating properties. It is especially recommended by the manufacturers for application to yarn in pressure equipment. It is not recommended for printing.

This color has a sufficiently flexible dyeing temperature range to render it suitable for combinations with "cold dyeing" colors. It is also recommended for application by the Du Pont Pad-Steam Continuous Dyeing Process and has good stability at reduced pH for dyeing in the Multi-Lap Continuous Processing Machine by the soda ash booster method.

* Registered Trade Mark

Pontachrome* Fast Gray L Conc.

(Du Pont)

A chrome color said to possess very good fastness to light even in pale shades. While top-chrome dyeings yield the best general fastness, acid and neutral dyeings produce shades of similar hue with essentially equal fastness to light. It is excellent for shading and is also useful for dyeing grays and taupes on men's-wear worsteds, woolens, upholstery and automotive fabrics.

Pontachrome Fast Gray L Conc. is said to be level dyeing, to penetrate well, and to be soluble in all practical concentrations. It is suitable for application to yarn, piece-goods, slubbing and loose wool by all methods of dyeing. This color is somewhat sensitive to the presence of iron

although unaffected by brass and Monel metal. Effect threads of viscose-process rayon and acetate rayon are left white while silk is noticeably stained.

* Registered Trade Mark

Pontachrome* Gray GL

(Du Pont)

An outstanding chrome color for the production of a range of grays and is also a very good shading element in other chrome color combinations. It is especially recommended by the manufacturer for high grade men's-wear suitings, overcoatings, upholstery and other worsted and woolen materials where its good resistance to light, washing and dry cleaning is important. It is said to be an excellent color for dyeing tops and rawstock which are to be incorporated in blends.

This chrome color is said to be level dyeing, to penetrate well and is readily soluble at all practical concentrations. While it can be applied by any of the three chrome color procedures, the chromate method is preferable.

Pontachrome Gray GL leaves cotton, viscose-process rayon and acetate rayon unstained. Although silk is slightly stained, silk-white effects can be obtained in light shades of gray by the "silk-white" method. Nylon is dyed appreciably redder and very much weaker than wool.

* Registered Trade Mark

Pontachrome* Yellow DF

(Du Pont)

Said to produce rich dull-gold shades which are very fast to light and also possess very good fastness to fulling, carbonizing with both aluminum chloride and sulfuric acid, perspiration, salt water and dry cleaning. Although this product is of interest for self-shades, it finds its most extensive application as a shading element in browns and olives. In these mixtures, it is especially suited to use on carpet stock, upholstery fabrics and bathing suit yarns. It is also recommended by the manufacturer for the production of O.D. uniform shades, overcoatings and blankets.

Pontachrome Yellow DF is said to be readily soluble in the usual concentrations, to penetrate well, and exhaust satisfactorily. It can be used with equal success on rawstock, tops, yarn or piece-goods, and is generally applied by the top chrome method. It is suitable for dyeing nylon by the top chrome process. As with most chrome dyes, appreciable amounts of iron or brass tend to dull the shade. Cotton, viscose-process and acetate rayon effect threads are noticeably stained, while silk and nylon are dyed.

* Registered Trade Mark

Pontamine* Blue 5B

(Du Pont)

An economical, tinctorially strong direct color, producing shades somewhat redder but similar in brightness to the sky-blue types. While this product possesses only moderate general fastness, it is suitable for use where brilliancy of shade is of major importance.

Pontamine Blue 5B can be employed for dyeing ribbons and other accessories which are not subjected to frequent laundering. It is useful for such articles as low-cost flags and buntings, book cloths, or rayon linings for suitcases and pocketbooks. It can also be used for pale shades on inexpensive cotton knit-wear.

Pontamine Blue 5B is said to be very level dyeing, to penetrate well, and to exhaust economically. It is dischargeable to a clear white by both alkaline and neutral methods. Acetate is left white. This color can be applied in all types of dyeing equipment.

* Registered Trade Mark

Pontamine* Fast Red 7BNL

(Du Pont)

Displaying excellent brightness and clarity of tone, Pontamine Fast Red 7BNL is said to incorporate fastness to light with economy and good dyeing characteristics. Its wet fastness properties are superior to those of the "8BL" and "8BNL" types. This direct color is applicable to all forms of cotton by the usual methods.

Pontamine Fast Red 7BNL is also suitable for dyeing other cellulosic fibers. It possesses low affinity for rayon below 190°F. which is an important factor in controlling a proper balance in cotton-viscose unions. It is of interest for dyeing cotton-wool unions with silk effects, as the animal fibers are dyed less deeply than the cotton and are left practically unstained at low temperatures. This product is said to exhibit good wet fastness when dyed on rayon and is suitable for use on rayon "washables" in light shades.

Pontamine Fast Red 7BNL is said to be level dyeing, slow exhausting, and to exhibit good affinity for cotton at temperatures as low as 160°F. It is dischargeable on both cotton and rayon in light shades, leaving but slightly tinted whites.

* Registered Trade Mark

Pyrazol Fast Garnet BL

(Sandoz)

This latest addition to the Pyrazol Fast Color series is reported to have good fastness to light, washing, perspiration and salt water. It is also stated to produce good discharges with both neutral and alkaline hydrosulfite pastes, and is suitable for the anti-crease process.

Acetate rayon is left white.

Because of its low affinity for wool it is highly recommended by the manufacturers for wool-cotton or wool-viscose union fabrics. Even at high temperatures, the wool is only stained lightly and can be left white by the addition of Thiotan RS.

Rapid Fast Brown IRH Powder

(General)

A stable azoic compound, soluble in alkali, which, after printing and developing in acid or vat ageing, develops in the form of an insoluble pigment said to possess superior fastness properties. It is equally suitable for direct printing on both cotton and rayon and can be developed fully in either acid ageing or ordinary vat ageing.

Rapidogen Blue R

(General)

A stable azoic preparation, soluble in alkali which, after printing and acid ageing, develops in the form of an insoluble pigment said to possess good fastness properties. When printed on cotton or rayon fabrics it produces bright reddish-blue shades said to possess good fastness to washing, light and chlorine. Is applied in the usual manner for Rapidogen colors. The stability in the print paste is good and the shade develops completely in acid ageing.

Rapidogen Bordeaux RN

(General)

A stable azoic dyestuff soluble in alkali, which after printing and developing in acid or vat ageing, develops in the form of an insoluble pigment, said to possess good fastness properties. The prints can be developed by the conventional acid ageing, or if caustic soda is replaced by Developer Base RPN in dissolving, they can also be developed by neutral ageing. The product, therefore, can be printed alongside vat colors.

Solophenyl* Yellow F F G L

(Geigy)

A red shade of yellow said to possess the extremely good light fastness of the other well known "Solophenyl" dyestuffs. Excellent for use as a self shade and also in combinations with other colors. This new and unique dyestuff is also said to possess very good resistance to anti-crease treatments employing urea formaldehyde and melamine resin, being only very slightly changed in shade and its light fastness unimpaired by the treatment.

* Registered Trade Mark

Supranol Brilliant Red BA—CF

(General)

A homogeneous acid dyestuff which, owing to its brilliant shade and good fastness properties represents a valuable addition to the series of Supranol colors. Due to its good affinity from a neutral bath, it is a very desirable product for the dyeing of union materials. Furthermore, it has good affinity for pure and weighted silk.

Textile Chemicals

Alcoflex

(Alco)

A firm aqueous cream type urea-formaldehyde resin, 50 per cent solids, for production of rayon, cotton, and combination fabrics having high dimensional stability, high resistance to mussing, and a firm full hand without paperiness or embrittlement. The product is claimed to be outstanding for the ease with which finishing solutions are prepared and for attainment of good cures with minimum time and temperatures.

Ammonyx TN

(Onyx)

A new mildew preventative compound to be used on textiles which could become mildewed at some time during processing. Is said to afford exceptionally good protection without causing crocking.

Ancat Finish 502

(De Paul)

An anionic softener. It is stated that this type of softener has no effect on light fastness of dyestuff, has good heat stability, and non-yellowing properties on white goods. It has a minimum chlorine retention and exhausts readily. It is claimed that it will stand launderings as well as cationics will. The anionic softeners can be used not only as finishing agents, but also can be incorporated with crease resisting finishes, starch finishes, etc.

Anisic Acid

$C_8H_8O_3$ Mol. wt. 152.14

(Heyden)

Para-methoxybenzoic acid. Properties—White needles, sublimable; Melting point —184°C; Boiling point 275-280°C. Solubility—Insoluble in cold benzene, petroleum ether; very slightly soluble in water; very soluble in alcohols, ether, chloroform, esters. Suggested uses—Organic intermediate useful in the preparation of dyestuffs, perfumes, cosmetics, soaps, pharmaceuticals, paints and varnishes.

Anisoyl Chloride

$C_8H_7O_2Cl$ Mol. wt. 170.59

(Heyden)

Para-methoxybenzoylchloride. Properties —colorless crystals or liquid; Melting point—22-23°C; Boiling point—263°C., 145°C/14 mm. Solubility—Soluble with decomposition in alcohol and water; soluble in acetone, benzene, petroleum ether. Suggested uses—organic intermediate useful in the pharmaceutical, cosmetic, perfume, soap, textile and paint and varnish industries.

Anthomine

(Arkansas)

It is claimed that Anthomine is a highly efficient dyeing auxiliary and leveling agent that is effective in acid dye baths and resistant to common and Glauber's salt. Therefore, it is especially recommended by the manufacturers for all wool dyeing processes.

It has been found to be of outstanding value in eliminating uneven dyeings on wool, particularly in the case of "tippy" wools.

It is stated that, in most applications involving stock or yarn dyeing, 1 per cent on the weight of the stock has been found to be the maximum required for satisfactory results, while in the case of piece goods, 0.5 per cent is sufficient. Besides producing a high relative degree of evenness in dyeing applications involving tippy wool, Anthomine is said to permit better color yield and does not affect the fastness of the dye.

Among the benefits that may be expected by the use of Anthomine are: increased color value, level shades, evening up tippy wool, reduction of dyeing time and better feeling wool after dyeing.

Aquakal #74

(Kali)

For wetting, penetration and levelling of dyestuffs. It is stated that it gives very fast rewetting when used in the Sanforized process.

Aquakal #77

(Kali)

A fatty acid amino condensate used as a detergent. It is said to save on soap. It is further said to give quick wetting and leveling and is useful as a retardent in stripping vats.

Arko Finish A

(Arkansas)

Arko Finish A is offered for finishing rayon and fine cotton fabrics.

It is a modified cationic type of finish that is said to impart a soft, mellow hand to fabrics when used at a concentration of 0.5 per cent on the volume of the bath. By using a somewhat higher percentage, a fuller bodied finish may be obtained if desired.

It is claimed that Arko Finish A is advantageous over many cationic types of finishes in that it causes little change of shade on application and affects light fastness to a less extent.

One of the outstanding properties of this product is said to be its extreme stability to high temperatures and, therefore, gives no indication of yellowing on white goods, even under severe test conditions.

Arko Finish A is a soft paste that disperses readily in water.

Tests on this product have indicated good durability to both laundering and dry cleaning.

Arquads* Quaternary Ammonium Salts

(Armour)

A new group of alkyl trimethyl ammonium chloride compounds said to be particularly suited to textile processing. As cationic softeners, they are claimed to greatly improve the hand and offer many other advantages for rayons, synthetic fibers, resin-treated fibers. Excellent re-

sults are reported to be obtained in concentrations of as little as 0.1-0.25 per cent.

The Arquads are also said to be of value in treating water used in air conditioning textile weave rooms, with as little as 1 ounce per 1,000 gallons of water stopping algae-clogging of spray nozzles and keeping down air-borne infectious germs.

* Registered Trade Mark

Atco X 500

(Atlantic)

This product is a long chain carboxylic amine condensation product which is said to provide exceptional colloidal dispersive action, combined with wetting and detergent properties which make it valuable in many wet processes. It is stated that the high concentration of this product makes only very small percentages necessary for excellent dispersion in the dyeing of Acetates or other dispersible colors. Re-wetting is also provided by Atco X 500, and its solubility in oils and dispersions by this means is also possible and effective.

Atcopen 2-T

(Atlantic)

This product is a wetting agent of the alkyl napthalene sulfonate class and is a liquid, easily visible with even cold water, and provides quick penetration of solutions into fabrics, stock, cones, yarn or pieces.

Atcopen 2-T is said to rinse freely and leave no residual odor. It is unaffected by hard water and requires the use of small amounts for efficient wetting.

Azocel B

(Synthetic)

A solubilizer for diazotized, developed, naphthol, acid and acetate dyes. It is a synthetic colloid, non-ionic in property and neutral. It is said to be stable in hard water and stable to acids, alkalies, salts and other electrolytes. It is claimed to be a powerful dispersing agent and to have the property of forming molecular compounds with water insoluble products rendering them water soluble.

It is stated that it has the unique characteristic of rendering excellent stability to diazo compounds, eliminates crocking and rubbing in naphthol dyeing. It is said to give good dispersion of acid and acetate colors.

Boconize*

(Bocon)

Boconize is a new durable compound which is said to protect woolens and other animal fiber fabrics from moth damage. It is stated that it is a non-toxic, non-inflammable, colorless and odorless chemical which is substantive to the fiber and resists both washing and dry cleaning. It leaves no residue on the fabric, and is said to be fast to light, perspiration and salt water and does not change the "hand" of the material. Boconize can be applied by padding, exhaustion or spraying and at almost any stage from yarn to finished garment. It holds the U. S. Testing Company's Certified Merchandise Seal of Quality. In numerous laboratory tests samples treated with Boconize were washed five times using the AATCC method for woolen fabrics and other samples were dry cleaned 25 times. After 28-day exposure to larvae, it is stated that they showed the same resistance to moth attack as an unwashed piece.

* Pat. applied for.

Burk-Schier Finish 190

(Burkart-Schier)

The latest addition to the Burk-Schier series of cation softeners, 190 is characterized by ready solubility in warm or hot water. It is said to impart a full soft hand. It is also available in half strength designated as Burk-Schier 190-HS.

Burtex

(Burkart-Schier)

A new synthetic detergent available in powder, paste, or liquid form. High detergency is said to be coupled with good wetting properties. It is effective in hard water.

"Carbowax"* Compound PF-45

(Carbide & Carbon)

A new "Carbowax" compound said to have extreme toughness and resilience. It melts between 50° and 55°C. More than 20 per cent by weight of PF-45 is soluble in water at 20°C. Thin layers are moderately flexible. Suggested for textile sizing and lubricant applications.

* Registered Trade Mark

Celfon

(General)

For the permanent finishing of fabrics. Among the outstanding advantages said to be obtained by the use of Celfon are: *Permanence of Finish.* It is stated that Celfon is not removed during many commercial launderings at high temperature or any type of dry cleaning. *Increased Wearability.* It is stated that experience has shown that Celfon can increase the tensile strength approximately 10 per cent and the resistance to abrasion over 20 per cent, thereby giving added serviceability. *Stabilization.* The use of Celfon has been found advantageous, in reducing residual shrinkage, to obtain better wash widths, and increasing yardage yields, from greige to Sanforize. *Other Advantages.* It is further stated that Celfon will reduce yarn slippage on low count fabrics and increase luster and body of all fabrics.

"Cellosize"* Hydroxyethyl Cellulose WSCM

(Carbide & Carbon)

A new aqueous grade of "Cellosize" hydroxyethyl cellulose designed for selective neutralization. Hydroxyethyl cellulose, 19 to 20 per cent by weight. Sodium hydroxide, 6 to 7 per cent by weight. The use of 2-ethylhexoic acid, or unneutralized sulfonated oils, to combine with the free alkali present is said to produce soft, pliable films requiring no additional plasticizer. Suggested by the manufacturers for use in textile sizing, and in emulsion stabilization.

* Registered Trade Mark

"Cellosize"* Hydroxyethyl Cellulose WSH

(Carbide & Carbon)

A new aqueous grade of "Cellosize" hydroxyethyl cellulose in four viscosity types, designated as WSHL, WSHM, WSHX, and WSHH. Hydroxyethyl cellulose content, 8 to 10 per cent by weight. Inorganic salt, 4.5 to 5.5 per cent by weight. Has somewhat greater body than the other grades of material and is generally more economical to use. Particularly suggested by the manufacturers for thickening applications, or in sizing or coating uses where a flexible film is not required.

* Registered Trade Mark

Cerfak 1300

(Houghton)

A non-ionic concentrated detergent and wetting agent said to cover an extremely wide range of applications.

Chloronol R

(Hart)

A scouring agent said to contain a large amount of powerful degreasing chlorinated solvents combined with synthetic detergents, emulsifying, and penetrating agents. Chloronol R is a clear amber colored gel, containing an excess of surface active agents which is said to render the product alkali, acid and hard water stable. This material dissolves rapidly in warm water giving a slightly turbid solution.

When used alone Chloronol R is said to be a highly effective solvent type cleaner for removing tenacious dirt, grease, and oils that cannot be removed with soap or synthetic detergents. It also serves as a water soluble spot remover. Used with soda ash or other alkalies its efficacy increases greatly.

CMC (Carboxymethylcellulose)

(Hercules)

A new water soluble celulose gum used for viscosity control of print pastes and for sizing and finishing. The dyestuff is added to water containing some CMC which thickens the solution. Cloth is printed with these solutions. CMC prevents the solution from "running" all over the cloth. After printing, the dyestuff is treated with either a reducing agent or an acid which sets it into the cloth, and the CMC is then washed out.

Comco Duller #1412

(Commonwealth)

A combination of pigments and binders, specially prepared for nylon hose.

Conco Anti-Fume Special

(Continental)

In paste or liquid. A three fold product which is said to protect against gas fading, to soften and impart a drapy smooth finish and to combine in the same bath other gums, weighters, dullers, nonslips, etc., with which it is compatible.

Conco Enzyme S

(Continental)

A powder enzyme for starch said to be easily soiuble, effective in minute percentages, and at either high or low temperatures.

Conco Non-Slip Special A

(Continental)

A better type, differently formulated non-slip that, it is stated, is effective on low count constructions and acetates and leaves a soft and drapy hand.

Conco Ribbon Finish #65

(Continental)

An alkyd type of resin, for stiffening acetates, without, it is claimed, (1) increase of weight, or (2) effect on the luster of satins, or (3) mark-off.

Concoset O

(Continental)

A modified urea formaldehyde resin, for crushproofing and shrinkproofing, designed to avoid formaldehyde odors in the processing plant or fabric.

Concosize

(Continental)

A series of unique and new resin emulsions designed to impart any combination of permanent properties to fabrics such as dulling non-slip and softening; dulling and stiffening; lustering and softening; lustering and stiffening, etc., etc. Compatible with many other finishes in the same liquor. Application is said to be simple and results to be permanent. No adverse effect on dyes. Applicable to every type of fiber.

Conestrol

(Continental)

A wetting agent of the ester type with a definite softening effect on the fiber and with little foam. Useful in all wet processing and claimed to be essential in package and yarn dyeing.

Coveral AS

(General)

A deororant for all textile finishes. It is an essential oil said to possess very powerful deodorizing properties. It is stated that as little as 0.1 per cent will neutralize or pleasantly mask most of the obnoxious odors that are liable to develop on textile fabrics. It is a clear, straw colored, non-volatile liquid with a characteristic vanilla odor. A 1 per cent dilution in water produces a thin, milky emulsion which is very slightly acid. (pH 6)

Cuprofix

(Sandoz)

A cation active resinous compound representing a new development for the dyeing of cellulosic fibers. It is offered for the aftertreatment of a selected range of direct dyestuffs, the Cuprofix Colors,—to improve fastness to washing, acid and alkaline perspiration, water, hot wet pressing,—and in some cases results in improved light fastness. The process calls for a short aftertreatment with 1-3 per cent of Cuprofix at a temperature of 160°F., and is said to result in fastness on many of the dyes as intermediate between developed and vat colors.

It is stated that the new dyes and method make possible a new standard of fastness on hosiery, knit goods and many other washable apparel. It is also reported that the fastness to milling of cellulosic fibers can be materially improved through the use of this new and simple process.

Darex Copolymer Latices 9L and X44L

(Dewey & Almy)

These high styrene copolymers in high solids latex form are used in rug backings, in sizing of yarn to resist abrasion, in felt for resistance to oils, and in hats for stiffening effect.

Darex* Polyvinyl Acetate Emulsions X56L and X58L

(Dewey & Almy)

These are said to be valuable in the textile industry for warp sizing prior to weaving, laminating, and filling; as a heat sealing coating; as a water, grease and oil repellent coating; as an undercoating for pyroxylin or vinyl finish coats; and as sizings in the felt and straw hat industry. They may be used alone or with starch to give semi-permanent stiff finishes to cotton, wool, rayon or other fabrics, including nylon stockings. In cases where flexibility is desirable, plasticizers must be mixed with the emulsions. They are compatible with waxes, natural and synthetic resins, gelatin, soluble oils. Darex PVA Emulsions are said to be outstanding for extremely fine particle size with resulting good penetration and resistance to settling and high molecular weight. They can be added with standard textile machinery as in slashers or padders.

* T. M. Reg. U. S. Pat. Off.

Daxads 11, 23, 27

(Dewey & Almy)

These dispersing agents are said to be useful in the textile industry for dispersing insoluble dyes and other materials in water. It is stated that in vat dye pastes they can be used to increase the dye content and reduce the amount of water. In dry printing powders the addition of small amounts of the proper type of Daxad will improve their dispersion in the dye bath. Daxad 23 is widely used to stabilize wax emulsions and rosin sizes to resist the effects of variations in pH, and of high and low temperatures.

Delvanol Detergent BX

(Dexter)

A synthetic detergent in powder form. Especially recommended by the manufacturers for boiling-off and dyeing of rayons and acetates. This product is buffered to keep the pH of the solutions below nine. Said to be resistant to the action of hard water, acids, and alkalies. This product is readily soluble in water at 120°F., and stock solutions may be prepared. It is stated that the levelling properties of this detergent make it excellent for combination boil-off and dyeing operations.

Delvanol Penetrant VO

(Dexter)

A wetting out agent of the alkyl naphtholene sulfonate type in powder form. It is recommended by the manufacturers for use in carbonizing, dyeing, and bleaching. It is readily soluble in water at all concentrations and may be used in any of the textile processes where wetting and resistance to chemical agents is important.

Depco Finish CA

(De Paul)

A cationic softener made for the purpose of holding the price line and still give the quality work required by the trade today.

Depco Resins

(De Paul)

A new line of resins. Depco Resins represent a series of water dispersible, thermoplastic resins. They have a broad range of usefulness in treating of all types of fabrics. Results obtained with Depco Resins are said to be permanent, yet in their application, very much simpler than the formaldehyde resins. Emulsions are stable in concentrated as well as diluted forms. They are fixated by normal drying operations from 235°F. up. Film formed is colorless, odorless, and non-yellowing. Depco Resins have no affinity for chlorine, therefore, no aftertreatment is necessary. It is stated that they can be plasticized with softeners of the cationic type producing a soft, semi-soft, or firm handle.

Dergon O M

(Arkansas)

Dergon O M is a synthetic detergent that is offered for use in all scouring operations in place of soap.

It is stated that it is a practically 100 per cent active ingredient product and consists entirely of mild organic compounds containing no harsh or strong alkalies. It is said to have a remarkably high wetting efficiency and to this property it owes, to a large extent, its detergent power.

It is claimed that, in many cases, the use of Dergon O M will replace three times its weight of dry soap. It may be used with or without soda ash, but it has been found that one to three parts of soda ash to one part of Dergon O M increases its efficiency in many scouring operations.

Dergon O M is not affected by excessive hardness or other unusual water conditions and, therefore, is said to rinse freely and quickly. It is stated that the rinsing time may be reduced by one-third to one-half when using Dergon O M in the scouring bath in place of soap.

It is particularly recommended by the manufacturers for scouring stock or fabrics containing unusual amounts of oil. One per cent to 2 per cent of Dergon O M on the weight of the goods along with a suitable amount of soda ash is said to be usually sufficient to solve the most difficult scouring operations. It has been demonstrated that the oil content of wool may be readily reduced to less than 0.5 per cent, even though it contained as much as 7 or 9 per cent before scouring.

Dergon O M is a viscous amber liquid which dissolves readily in warm water and, therefore, does not have to be boiled up as in the case with many soaps.

Detanol A

(Commonwealth)

A long chain aryl-alkyl sulfonate in powder form. It is said to be an economical adjunct for scouring, boil-off, dyeing and washing operations.

Detanol P H

(Commonwealth)

A non-ionic wetting and levelling agent. It is said to be stable in acid, alkaline or salt solutions and to be a good assistant to produce uniform shades on welt, body and heel on nylon hose.

Detersol L-41

(Standard Chemical)

A synthetic detergent-soap-solvent blend for scouring and dyeing. Said to be particularly suited for cleaning lacquer printed back greys.

Detersol S-20

(Standard Chemical)

A neutral soap-synthetic detergent paste, especially designed for scouring and dyeing of rayon, acetate, and mixed goods. It is said to have excellent detergent, wetting, and dispersing properties.

Dexolene CS Paste

(Dexter)

A concentrated wetting agent in paste form. This product is an alkyl-aryl sulfonate. It is said to be strongly resistant to strong acid and alkali conditions, and may be used for all general wetting out problems.

Dextrol Tar Remover C

(Dexter)

A concentrated mixture of solvents and emulsifying agents designed for efficient cleaning and removal of tar in wool. This product is readily soluble in water and may be used in the concentrated form followed by washing, or in a dilute solution for cleansing the wool.

3,4-Diamino Toluene

$C_7H_{10}N_2$ Mol. wt. 122.13

(Heyden)

Crystalline solid. Moderately soluble in cold water. Soluble in most organic solvents. Suggested uses: Phenazine dyes, organic heterocyclics, and pharmaceuticals.

Dinonylnaphthalene

(Sharples)

Dinonylnaphthalene is suggested as an intermediate for the production of an anionic surface active agent by sulfona-

tion. This sulfonate is said to have the unique property of increasing in effectiveness as a wetting agent as temperature is increased. It does not exhibit as much hard water tolerance as the sulfonate of monononylnaphthalene.

Specifications:

Color ..... Dark Straw

Specific Gravity
@ 20/20°C. 0.92-0.95

Distillation @ 20 mm
95% between 200.0-270.0

Other Properties:

Flash Point (Open Cup) °F. 350
Fire Point °F..... 420
Refractive Index @ 20°C. 1.540
Aniline Point 6

Duolene

(Hart)

A new penetrant and levelling agent for the dyehouse. Duolene, a concentrated amber colored clear oil, is also a rewetting and stripping agent possessing mild detergency in either weak acid, alkaline or salt solutions. It is claimed to be an excellent dispersing agent for acetate colors. Duolene is recommended by the manufacturers for vat or pad dyeing and for dyeing operations in general to obtain greater uniformity of shade. Added to printing pastes, Duolene is said to improve penetration and give better fastness to soaping.

Du Pont Sodium CMC

(Sodium Carboxymethyl Cellulose)
(du Pont)

Water soluble form available in five viscosities.

14 WXL Extra Low
12 WL Low
14 WM Medium
4 WH High
4 WXH Extra High

It uses include: textile finish, thickener and carrier in textile print paste, adhesive, emulsifier, and dispersing agent.

Dyebond B

(Stein, Hall)

An aqueous dispersion of synthetic resins combined with a suitable thickener which is said to give superior results in pigment printing on all fabrics. It is recommended by the manufacturers particularly for acetate and spun glass fabrics. It can be used in screen as well as roller process printing. The manufacturer also supplies the binder, Dyebond, for use with any suitable gum-type thickener.

Eulysine A

(General)

A straw colored, practically odorless alkaline liquid with good wetting property. It is recommended by the manufacturers especially for dyeing sulfur colors to eliminate or greatly minimize bronziness, also as an addition to crabbing liquor with marked improvement in the subsequent scouring operation.

Fanco Finish 174

(Fancourt)

A blend of waxes which forms a stable emulsion in hot water and it is stated that it gives excellent lubrication and improves the sewing properties of heavy cotton fabrics. It is especially recommended by the manufacturer as a finish for heavy duck piece goods.

Fanco NY-Grain 262

(Fancourt)

A highly plasticized colloidal finish said to impart body and good boarding properties to hosiery.

Fanco Por-Tex

(Fancourt)

A water dispersible high polymer modified resin which produces a variety of permanent finishes to any textile fabric. They are applied in a dilute aqueous bath and are fixed by the regular drying methods. They are said to impart body, strength and fullness.

Fanco Resin M-2

(Fancourt)

A colloidal thermosetting resin which may be applied to any textile fiber to give a durable anti-slip and fullness. It is said to be extremely fast to washing and drycleaning.

Fanco Resin D-257

(Fancourt)

A new type of resin finish manufactured especially for finishing nylon hosiery. It is claimed to impart dullness, varying degree of body and excellent snag resistance to the finished hose.

Fanta-Scour 254

(Fancourt)

A sodium salt of aryl akyl sulfonate blended with anionic and non-ionic detergents which is said to have effective oil and grease removing properties, and is an excellent wetting out, leveling and penetrating agent for use in the dyebath.

Fantachine

(Fancourt)

A highly dispersed wax paste which forms a stable emulsion in boiling water which is claimed to lubricate and modify other resin finishes.

Filaseal Resin

(Amalgamated)

A new hosiery finish of the resin type in emulsion form designed for use on nylon full fashioned hosiery. It is said to impart excellent hand and snag resistance. This resin finish is further said to have excellent stability and to offer ease of application.

Formaset S

(Warwick)

A thermo-setting modified urea-formaldehyde resin intermediate. This is a relatively high polymer but is said to be still completely soluble in water. It is being used on all types of cellulosic fabrics for finish and shrinkage control where body and firmness are required.

Hand Cleaner

(Publicker)

A new cream hand cleaner is presented which is said to be very versatile, being useful for printers, mill workers, office personnel and maintenance personnel of all types. It is said to be particularly useful in removing grease, oils, inks, pigments, etc. The hand cleaner is a stable white cream, containing no abrasive. The cream hand cleaner does not require the use of water. It is said to clean efficiently simply by rubbing on and wiping off.

Houghto-Size C.W.

(Houghton)

A concentrated warp size softener said to combine the functions of softening, binding and plasticizing cotton warp size and to provide low cost sizing at a definite increase in weaving efficiency.

Hydroxanil G*

(Maher)

A new coupling agent for coupling developed acetate blacks on acetate, nylon, and rayon materials, or combinations of them. Hydroxanil G is said to produce deep, jetter shades of black with superior washing, perspiration, and decatizing fastness over products heretofore used. Hydroxanil G may also be used to couple a wide range of diazo colors on cotton and rayon materials and unions.

* Patent Applied For

Hydroxanil 2R*

(Maher)

A new coupling agent, similar in property to Hydroxanil G, but producing redder shades of black than the G type.

* Patent Applied For

Hydroxanil S*

(Maher)

A new coupling agent used to produce a wide range of shades on cotton, rayon, and union fibers with direct diazo dyestuffs. Hydroxanil S is also used to produce wash fast shades of red and brown on acetate and nylon.

* Patent Applied For

Kalamine "S"

(Kali)

A cation active softener which exhausts slowly when used in the quetch.

Kalepon

(Kali)

A modified Lamepon; a protein fatty acid condensation product. It is said to be stable in hard water and alkaline solutions and is useful in scouring and leveling and as a buffer against alkali and chlorine.

Kalpinols

(Kali)

Used in trough solution for wetting nylon when knitting.

Kaltergents

(Kali)

Polyphosphates and alkali with synthetic organic detergents. They are said to possess excellent scouring properties in hard water and are free rinsing.

Keranol N K

(Arkansas)

Keranol N K is a substantive finish that is said to have a powerful softening action.

It is recommended by the manufacturers for finishing rayon and cotton fabrics to produce a very soft fabric with a smooth or lubricated surface finish.

It is stated that it is not affected by alkalies or acids that are usually associated with finishing and is compatible with all types of resins including melamine and urea formaldehyde compositions.

It is said to produce a durable finish.

Lauryl Gallate

$C_{19}H_{32}O_5$ Mol. wt. 348.45

(Heyden)

Purified grade of Lauryl Gallate. Appearance: White powder. Melting point 91-93° C. Soluble in edible oils, glycerine, triacetin, benzene, acetone, lower alcohols and ether. Insoluble in water and aliphatic hydrocarbons. Uses: Oxidation inhibitor and stabilizer for substances subject to autooxidation. Useful in vegetable and animal fats, fatty acids, and oils, ethers, etc. Available in research quantities.

Luminol

(Onyx)

A colorless, luminescent chemical which fortifies whites. It is said to impart brilliance to ground shades or plain dyed fabrics. Used primarily for cotton and rayon.

Lyofix SB Conc.

(Ciba)

A melamine condensate which is said to be a superior fixing agent for improving the fastness to water of direct and union dyeings and also prints, by a simple aftertreatment at ordinary temperature. It is claimed that the properties improved by treatment with Lyofix SB Conc. include: fastness to water, perspiration, damp hot pressing, washing, sea water, sizing, milling, and finishing. It is stated that they are so appreciably increased as to extend considerably the sphere of application of the direct color series.

Maprofix NEU

(Onyx)

A highly concentrated sulfated fatty alcohol in powder form. Is said to possess excellent foaming and detergent properties.

Marcaton #2

(Maher)

A new cation-active finishing material to be used in conjunction with methacrylate resin finishes, to disperse and fix the resin on the fabric and to subsequently soften and lubricate the finish to produce longer-wearing results. It is stated that where 10%-12% resin is usually employed this may be cut to 4% with the use of 3% Marcaton #2, thereby producing superior finishes at a considerable saving in production cost.

Marcosol HC

(Maher)

A new hand cream that has found valuable use in hosiery mills to protect workers' hands from roughening and snagging fine deniers of nylon and silk hosiery. It is stated that Marcosol HC has been found invaluable as an aid in reducing seconds in the boarding, mating and finishing departments of up-to-date hosiery mills. Marcosol HC, being a cream and not liquid, is said to be more lasting and give better protection.

Maypon Super K

(Maywood)

A new member of the line of Maypon protein-fatty acid-condensation products. Maypon Super K is said to possess increased detergency making it particularly interesting in scouring operations.

In solvent emulsions of the clear type it tends to form stable clear preparations even in the presence of substantial amounts of water. It is stated that emulsions of the O/W type containing Maypon Super K are not easily converted into the W/O type.

M. D. A.

(Heyden)

A technical grade of methylene disalicylic acid (dihydroxy diphenylmethane dicarboxylic acid). It is a mixture of isomers principally para-para as well as low molecular weight polymers. Appearance: buff colored powder. Combining weight 150, Souble in methanol, acetone. Insoluble in water, petroleum hydrocarbons. The chemical structure of MDA makes it possible to produce phenolic type alkyd resins of improved properties. Suggested uses: Manufacture of paints, varnishes, printing inks, linoleum and similar products. Available in research quantities.

Merlon* KR-1 and KR-2

(Monsanto)

Fifty percent solids dispersion of polyvinyl acetate resin polymers in water capable of producing wide variety of durable finishes to textile fibers and fabrics. Non-plasticized type of thermoplastic resins which are applied in dilute bath and fixed by regular drying. Said to impart increased luster, body and durability. Recommended by the manufacturers as combining and binding agent and for coating pile fabrics. Require no curing or after treatment. Particle size is from 0.5 to 1 micron, and particle charge is negative. Films made from KR-1 are continuous and flexible; those from KR-2 are continuous, quite hard, and will not re-emulsify in water. KR-1 may be plasticized with dibutyl phthalate and other plasticizers; presence of a relatively large amount of dispersing agent should permit the emulsification of the plasticizer into the dispersion with proper agitation. KR-1 has a pH of about 4 but is stable over a fairly broad pH range.

* Registered Trade Mark

Methoxy Polyethylene Glycols 350, 550, and 750

(Carbide & Carbon)

The 350 compound is a slightly viscous liquid, while the 550 and 750 materials are soft, wax-like solids. All are completely water soluble. The inert methoxy radical as one terminal group allows the preparation of essentially pure mono fatty acid esters, which are useful as detergents, emulsifying and dispersing agents that are not affected by mild acids or hard water. They are also suggested by the manufacturers for use as plasticizers for caseins, gelatin compositions, glues, and similar materials.

Milducide RP

(Richmond)

A combination of mildew proofing and rust preventive, which when used with Nyltex #250, is said to prevent the formation of mildew and algae deposits in the troughs of full fashion knitting machines as well as inhibiting the formation of rust on needles and sinkers.

Monononylnaphthalene

(Sharples)

Monononylnaphthalene is a new commercial hydrocarbon which, it is stated, may be sulfonated to yield an efficient detergent and wetting agent. The sulfonate of monononylnaphthalene is said to have excellent hard water tolerance and to be stable in acid and alkaline media. The sulfonate is suggested for use in the textile, metal processing, paper, cosmetic, and agricultural industries, as well as in the preparation of other commercial cleaning compounds.

Specifications:

Color	Light Straw
Specific Gravity @ 20/20°C.	0.93-0.94
Distillation	
Initial Minimum °C.	300
95% between ° C.	320.0-350.0

Other Properties:

Flash Point (Open Cup) ° F.	315
Fire Point °F.	355
Refractive Index @ 20° C.	1.555
Aniline Point	—11

Nekal NF

(General)

Recommended by the manufacturer especially as a wetting assistant in the application of reduced vat dyestuffs by the padding process and, it is stated, has been very favorably received by the trade due to its excellent wetting and outstandingly good non-foaming properties. It is also said to be an excellent assistant in scouring, pasting of dyestuffs and leveling and penetrating of dyeings.

Neufume

(Onyx)

This product is said to confer to dyed acetate rayon mixtures color protection against color fading fumes. This compound is stable under alkaline conditions and can be used in conjunction with any alkaline softeners or sizes or chemically inert finishes. It is recommended by the manufacturers for use on all acetate fiber or fabric and on acetate rayon unions. The dyed acetate fabric, after it has been dried, can be passed through a solution containing 8% Neufume AC at a temperature of 100 to 105° F.

Neutronyx 834

(Onyx)

Fatty acid ester of a polyether alcohol. Amber-colored oily liquid. Dispersible in water, soluble in common organic solvents and in mineral oil. Non-ionic surface-active emulsifying agent, particularly suitable for the preparation of "oil-in-water" emulsions of mineral oil. Commercially available in anhydrous form.

Nonylanaphthalenes

(Sharples)

A blend of mono and dinonylnaphthalenes. This blend is suggested as an intermediate for the manufacture of anionic surface active agents by sulfonation. The sulfonate produced from it is said to be an efficient wetting agent and detergent for use in soft water.

Specifications:

Color	Straw
Specific Gravity	
@ 20/20° C.	0.92-0.94
Distillation	
95% between °C.	320.0-400.0

Other Properties:

Flash Point (Open Cup) °F.	315
Fire Point °F.	365
Refractive Index @ 20° C.	1.550
Aniline Point	—8

Nopalcol* Series

(Nopco)

A unique series of nonionic emulsifying and dispersing agents composed of long chain ethylene oxide polymers of fatty acids. Being nonionic, these materials are not affected by hard water, salts or dilute acids which usually cause instability when soaps, sulfated oils or sulfated fatty alcohols are used. It is stated that the outstanding feature of the Nopalcol compounds is the flexibility of their chemical and physical properties due to alteration of the length of either the fatty portion or the ethylene oxide polymer. Certain members of the Nopalcol series are particularly recommended by the manufacturers for reducing and controlling the viscosity of starch solutions, for dispersing dyestuffs, and as penetrating and leveling agents in dyeing.

* Reg. U. S. Pat. Off.

Nopco Gue

(Nopco)

An aliphatic compound said to possess outstanding detergent characteristics. Excellent for removing grease, fat, mineral oil, waxes, etc. It is claimed that it is far superior to the regularly used soaps and sulfated compounds for this purpose and is equal to them for the removal of chalk, standard soil and other inert matter. Particularly recommended by the manufacturer for fulling and scouring both light and heavy weight woolen and worsted piece goods. Also said to be one of the most potent detergents for wool grease ever seen, doing a more effective job at much lower cost. Produces a persistent

lather that will hold in both hard and soft water completely replacing soap and ordinary type detergents. It is compatible with lime and prevents the formation of insoluble soap compounds sometimes occurring in wool scouring. The product rinses quickly and gives an extremely low ether extraction.

* Reg. U. S. Pat. Off.

Nopcogen* Series

(Nopco)

An interesting series of cationic surface active chemicals. Known under the trade name Nopcogen, these products are said to possess unusual physical and chemical properties, attributed to the combination of fatty nuclei and nitrogenous chemicals. The higher molecular weight members of the series show an increasing degree of basicity and have an improved and more complete dispersibility in acid mediums. Some members of the series exhibit complete solubility in waxes, petroleum and vegetable oils, and numerous organic solvents. A most outstanding property of these surface active agents is said to be one in which the oil phase of an emulsion is made substantive to cellulose. This property simplifies processing of yarns and fibers and improves markedly the appearance and durability of fabrics.

* Reg. U. S. Pat. Off.

Nuodex 100

(Nuodex)

A new, highly effective textile fungicide and bactericide available in two forms: Nuodex 100 SS, the solvent or oil soluble type, and Nuodex 100 WD, the water dispersible type. It is stated that Nuodex 100 does not affect feel or hand of fabrics and has been proved non-irritating, non-tendering, colorless on fabrics, mild in odor, extremely leach resistant and durable, widely compatible, non-corrosive and economical. It is recommended by the manufacturers for use in textiles to protect against mildew and bacteria during processing, shipping, or storage, or in the finished product to add the sales plus of mildew and rot resistance.

Nyaseal

(Fancourt)

A high melting point wax emulsion which is claimed to have received great acceptance as a lubricant for nylon hosiery and being compatible with other finishes, gives good boarding properties to hosiery.

Nycolene 5

(New York)

A cationic detergent and penetrating agent said to be useful for application to all types of textile material. It is said to be outstanding for its sudsy properties, good rinsability, and its efficiency in hard water.

Nydull

(Fancourt)

A new pigment dulling agent said to be adaptable to all types of nylon hosiery but particularly to 15 denier mono-filament. It is claimed that this dull not only removes the sheen, but gives a better color union between the welt and the boot of the hose. It may be applied by the conventional method of finishing hosiery.

Nyltex #250

(Richmond)

A new compound to be used in the troughs of full fashion knitting machines for knitting nylon. It is said to give a firmer, wider stocking which is freer from pull threads than the usual stocking. It gives a cleaner trough that is much freer from deposits and scum. It must be used with Milducide RP.

Onyxol 9162

(Onyx)

A non-sulfonated fatty acid-amine condensate suggested for use in all dyeing operations of synthetic and natural fibers, wool scouring, fulling and dye levelling. Said to be a good emulsifying agent and detergent.

Para Benzyl Phenol

$C_{13}H_{12}O$ Mol. wt. 184.21

(Heyden)

White needles. Insoluble in water. Soluble in most common organic solvents. Suggested uses: Intermediate in organic synthesis, disinfectants and pharmaceutical products.

Para-Sol

(Burkart-Schier)

A fine particle size paraffin wax emulsion. It disperses readily in hot or cold water. It is used as a pure finish or in conjunction with starches or other finishing agents.

Penetrant L-1099

(Burkart-Schier)

A wetting and dispersing agent said to be characterized by low foaming. It is further said to be an effective dyeing assistant and to be resistant to hard water.

Pentawax 227

(Heyden)

A medium melting point wax derived from pentaerythritol and long chain fatty acids. Appearance, light tan flakes; odorless. Properties, Specific gravity 25°/25° C. — 1.01, Saponification number 163, Acid number 5, Softening point 55° C., Melting point 53° C., Iodine number 4. Uses: Lubricant, Paper Coating Wax. General wax replacement. Available in commercial quantities.

Phi-O-Sol WP

(Onyx)

A new wetting agent said to possess superior wetting characteristics coupled with little or no foaming. Especially valuable for pressure dyeing work.

Pluramine S-100%

(Kearny)

A fatty acid condensation product said to possess outstanding wetting, detergent and emulsifying properties. Said to be of highest concentration with absence of water and salt diluents and valuable for scouring of raw stock and grey goods, in the soaping of dyed and printed goods, as a dyeing and finishing assistant and for numerous other wet textile processes.

Print Thickener

(Publicker)

A new print thickener, said to eliminate problems of deterioration upon prolonged storage is now presented. This new print thickener is prepared from a new resin made from domestic raw materials. It is said to be completely water soluble and easily removed. It is said that the print thickener has been found to be useful with almost all classes of dyes.

Continued on Page 711

Proceedings of the

American Association of Textile Chemists and Colorists

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DECEMBER 1, 1947

Seen during the Intersectional Contest — *Chicago, October 25, 1947*

National Committee: Frank J. O'Neil; Patrick J. Kennedy, Chairman; J. Robert Bonnar and C. Norris Rabold. Other members not shown are Winn W. Chase and Arthur T. Brainerd.

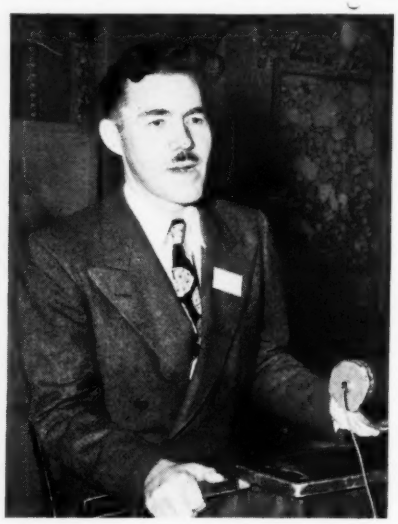
Dr. Leonard J. Armstrong, Chairman, and Dr. Ben C. Sher, Speaker, Contest Committee, Mid-West Section.

RICHARD B. STEHLE
Chairman and Speaker, Contest Committee, Philadelphia Section.

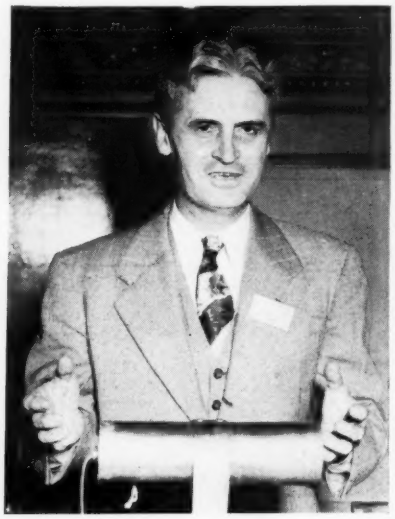
DR. RAYMOND B. SEYMOUR
Chairman and Speaker, Contest Committee, South Central Section.

ERNEST R. KASWELL
Speaker, Contest Committee, Northern New England Section.

RAYMOND W. JACOBY
Speaker, Contest Committee,
Rhode Island Section.



P. J. FYNN
Speaker, Contest Committee,
Southeastern Section.



DR. ALFRED L. PEIKER
Speaker, Contest Committee,
New York Section.

Annual Business Meeting

October 24, 1947

THE Annual Business Meeting of the American Association of Textile Chemists and Colorists convened at eleven-forty o'clock, in the Congress Hotel, Chicago, Illinois, Henry F. Herrmann, President of the Association, presiding.

President Herrmann: The meeting will come to order.

The By-Laws of our Association provide for an annual business meeting. It extends to every member the privilege of asking the officers of the Association any question which he may have in mind regarding the affairs of our Association. In the way our Council meetings are now conducted, you are amply represented through your Councilors and the Councilors in turn are instructed to report back to the sectional meetings those matters which are of outstanding interest. Nevertheless, it is your privilege, once a year, to raise any questions which may occur to you, and the time for that is now.

I might mention a few of the things that occurred during the past year which are of unusual interest. Our affairs have grown to the point where we found it necessary to have a full time secretary. We have gone a long way in the 26 years of our history, from when we started out with volunteers only, and then found it desirable to have a part time secretary and eventually a full time secretary. It was but recently that we had to engage the full time services of a Research Director. Again, that is an indication of growth which made it impossible to supervise and to conduct the research affairs of our Association on a purely voluntary basis.

Up to recently we were able to conduct the affairs of our Association with the $5.00 membership fees of individual members. At the present time, the General Fund derived from membership at the increased rate of $7.50 is necessary to conduct the general management of the Association and to provide the Year Book and Dyestuff Reporter. That leaves nothing for research. We began with a research budget of about $35,000. We are now aiming at a budget closer to $50,000, which must be provided by outside support. For this purpose we have reorganized our corporate membership, which is underwriting these charges.

Recently, we set up an Executive Committee for Research to administer research from a business standpoint, while the Chairman of the Research Committee undertakes the scientific supervision of the sub-committees.

We are now considering certain changes within those committees, made necessary by the regretted resignation of Dr. Olney from the Chairmanship of the Research Committee.

I might mention, as my last remark, that you may have seen the illustration in the current issue of the Reporter of the new format of the Year Book. Here is the old one. Here is the new one, 1947-1948. It will be of larger page size, and printed in three columns. It will have a better appeal to advertisers, and as regards the text, in which we are interested, our coverage will be better. We think that once your bookcases become adapted to this new format, you will probably like it a great deal better. We closed a contract with the Howes Publishing Company this past spring, which I hope will prove mutually attractive. It gives us certain rights with respect to the Reporter, and provides, in a businesslike manner, for the publication of the Year Book. There have been times, you know, when the Year Book was as much as a year late in publication. The way the machinery is now set up the Year Book is supposed to be in your hands every summer in the year stamped on the cover.

As I said before, the By-Laws provide for this meeting in order that you may have a chance to ask any questions but the Chair will not be offended if you don't have any. I think there are enough officers present to answer any pertaining to their particular administrations.

The minutes of the Council meeting, the Treasurer's financial report, the Secretary's financial report, and the Auditor's report for the fiscal year of the Association are available for inspection and will be published in as early an issue of The Reporter as the space can be found for them.

Gentlemen, I thank you for your kind attention. The meeting is adjourned.

. . . The meeting adjourned at eleven-fifty o'clock. . .

Intersectional Contest —

The Effect of Electrical Charge in the Application of Dyestuffs*

Presented by

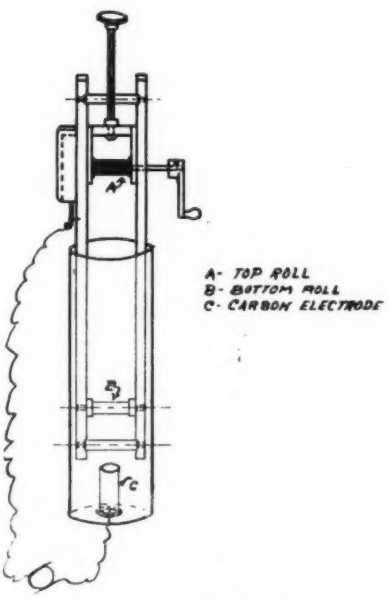
RHODE ISLAND SECTION

COMMITTEE

Herman C. Allen, *Chairman*
William F. Huber
Herbert F. Kilguss
Dr. W. George Parks
Prof. William W. Russell
Gerald B. Stackpole
Harold B. Sturtevant
William M. Thornton
George H. Wood, Jr.
Raymond W. Jacoby, *Speaker*

PREVIOUS work (*1*) showed an electrical charge on vat color pigment particles, and it is common knowledge that water-soluble dyestuffs dissociate, giving dye ions which carry an electrical charge. Therefore, it was felt that electrophoresis (the movement of charged particles in an electrical field towards the electrode of opposite charge) could accelerate or retard the deposition of soluble dyestuffs or vat pigments upon a fiber. Accordingly, this study was undertaken to determine what effect electrical charge might have in the application of dyestuffs.

In order to carry out the experimental work, apparatus as shown in the sketch was constructed. This apparatus consisted of a glass cylinder, in the bottom of which was a carbon electrode serving as one terminal of the electrical circuit, and a wooden frame holding two rollers, around which a skein of yarn traveled. The bottom roller was of wood, the same as the frame, and in operation was below the surface of the liquid in the cylinder. The top roller was an electrical conductor, arranged so it could be driven, and was the other terminal of the electrical circuit. In operation this top roller was above the liquor in the cylinder. With this arrangement current would pass from the top electrode through the yarn, thence through the liquor to the bottom electrode, or vice-versa. In this way it was intended to impart an electrical charge to the yarn. The liquid in the cylinder contained the dyestuff to be applied. Skeins could be rotated in the dye liquor either without current, or with the top roller made positive or negative as desired, and in the following description, where the polarity of the electrode is mentioned, it refers to that of the roller conductor with which the yarn was in contact. Various materials were tried for the roller electrode; namely—brass, stainless steel, nickel, aluminum and carbon. The brass electrode dissolved, especially when positively charged,—discoloring the dyeings and its use was discontinued. For some of the work another type of apparatus was used which consisted of two platinum electrodes, one a stationary gauze cylinder, and the other a rotating loop, both being lowered into a beaker containing a dye solution. The material to be dyed was secured around the rotating electrode, which, like the other form of apparatus could be without current, or positive or negative as desired.



Apparatus Used in Experimental Work.

The study covered three different types of dyestuffs, viz: Direct Colors, Acid Colors, and Vat Colors, the results of which will be reported under the respective headings.

Direct Colors

Valence

Since direct colors appear to be mono-, di-, tri-, or tetra-valent according to the number of sodium or positive ions in the dye molecule, it seemed logical that the dye ion would carry 1, 2, 3, or 4 negative charges. Therefore, if imparting a charge to the yarn from an outside source had any effect upon the migration of the dye ion, such action might be expected to increase with the charge on the dye ion.

In order to investigate this premise a series of tests were conducted under the following conditions:

1.—Weight of skeins of boiled off and bleached cotton yarn—10 grams.
2.—Rate of rotation of skeins—8 RPM.
3.—Volume of dyebath—1500 c.c.
4.—Type of roller electrode—carbon.
5.—Potential—110 volts DC.
6.—Time—10 minutes.
7.—Temperatures—120° F. and 180° F.
8.—Electrical conditions—
  1—no potential.
  2—electrode positive.
  3—electrode negative.
9.—Dyestuffs used—
  Copper Blue G—CI 502—di-valent.
  Direct Blue 3RX—CI 464—tri-valent.
  Direct Fast Blue B Ex.—CI 576—tetra-valent.

On inspecting these dyeings it was found that the difference in color intensity with the di-, tri-, and tetra-valent hot dyeing colors at both 120° F. and 180° F. were practically negligible. Therefore, it was concluded that increased valence

* Presented at Intersectional Contest, National Convention, Chicago, Ill., October 25, 1947.

gave no increased color take-up under the influence of electrical current.

Cold and Hot Dyeing Colors

With direct colors there are such wide variations in depths of dyeing at various temperatures that they are classified as hot or cold dyeing colors. Whether these properties would be altered by electrical current was next considered. For this purpose a hot and a cold dyeing color were selected, namely:

Direct Fast Blue B Ex.—C.I. 576—Hot dyeing—take-up at 120° F.—20% of a 190° F. dyeing.

Direct Brill. Sky Blue 6B—C.I. 518—Cold dyeing—take-up at 120° F.—100% of a 190° F. dyeing.

Although the investigation of the effect of valence showed no differences, the two colors selected for this test were both tetra-valent, thereby eliminating this possible variable.

A series of tests were run under varying conditions of temperature and electrical current as described above.

The results were practically a duplication of those on the basis of valence in that no significant differences could be seen. Hence, it was concluded that the hot and cold dyeing properties were unaffected by the applied potential.

Staining of Wool

In order to determine the effect, if any, that an electrical current would have upon the staining of wool with direct colors, two dyes were selected, which, under ordinary dyeing procedure have very little staining effect. These were:

Direct Sky Blue A—C.I. 520.

Chlorantine Fast Blue 3RLL—C.I. 319.

Tests were run with a 5 gram skein of cotton, and a 5 gram skein of wool on the apparatus at the same time. They were run for 10 minutes at 120° F. A set was run in each of the three following ways; no potential, electrode positive, electrode negative.

In all instances the wool was practically uncolored showing that the current had no effect as far as staining wool was concerned.

Effect of Electrolytes

Heretofore all tests were made with dyestuff dissolved in distilled water. Under these conditions very small amounts of current, of the order of 0.01 ampere, passed through the system. It was desirable, therefore, to investigate the effect of increased conductivity, and to this end runs were made in which Glauber's salt (100% based on the weight of the skein) was added to the dyebath. Tests were run at 120° F. and 180° F., without current, with the electrode positive and with the electrode negative.

As would be expected, the addition of Glauber's salt to the dyebath greatly increased the depth of shade on the skeins run without current, as compared to similar dyeings without Glauber's salt present.

In this study the following ten dyestuffs with varying properties were used, and over 150 dyeings were made under different conditions of current, temperature, concentration of electrolyte and type of electrolyte:

1.—Congo Brown G
C.I. 598 Mono-valent
2.—Direct Orange R
C.I. 415 Mono-valent
3.—Direct Fast Scarlet SE
C.I. 327 Di-valent
4.—Direct Brill. Blue 5BC
—
5.—Cotton Red 4B
C.I. 448 Di-valent
6.—Direct Fast Blue B Extra
C.I. 576 Tetra-valent, hot dyeing
7.—Direct Blue 3RX
C.I. 464 Tri-valent, hot dyeing
8.—Copper Blue G
C.I. 502 Di-valent
9.—Dir. Brill, Sky Blue 6B
C.I. 518 Tetra-valent, cold dyeing
10.—Benzo Blue FR
— Tri-valent, hot dyeing

When skeins were run with the current on, widely varying results were obtained, such as: no effect, variations in depth of shade, off shade, and unevenness. These bore no relationship to valence, or to hot or cold dyeing properties. In checking the results obtained against sensitivity to acid and alkali of the colors used, there seemed to be a relationship. For example, in the apparatus used, when the upper roller was made negative there must have been a temporary alkaline condition there, but when this roller was made positive a temporary acid condition must have existed.

This situation was caused by the fact that the yarns after passage around the upper roller and before it again entered the dyebath would be affected by the acid or alkali electrolytically produced. Although an equivalent amount of alkali or acid was, of course, produced at the submerged electrode, this electrode was not in contact with the yarns and any acid or alkali produced there would be rapidly diluted by the stirring effect produced by the rapidly rotating skein of yarn.

Colors which were rated excellent to acid, but very poor to alkali showed no difference without potential or with electrode positive, but when run with the electrode negative they were very uneven, off shade and weak, while a color rated good to both acid and alkali showed practically no difference whether run without potential, skein positive, or skein negative. Further indications of this condition were shown on tests to determine the staining effects of direct colors on wool under the influence of electric current when an electrolyte is present in the dye bath. In this trial Chlorantine Fast Blue 3RLL, C.I. 319, was used, as under ordinary dyeing conditions, it stains wool very slightly. A 5 gram skein of cotton and a 5 gram skein of wool were mounted on the apparatus together. Amount of color used was 1.5% of the weight of the two skeins. Anhydrous sodium sulfate (15% on weight of yarn) was added to the dye bath. Three sets of skeins were run for 10 min. at 120° F., one set without potential, one with electrode positive, and one with electrode negative. Without potential and with electrode positive, the wool skeins were practically uncolored. With the electrode negative the wool skein was very unevenly stained a reddish cast. Another series was run in which anhydrous sodium sulfate was replaced with 0.6 c.c. of 66° Bé sulfuric acid. The volume of dye liquor was 800 c.c. Under these conditions the wool skeins were all heavily colored the same reddish shade as with sodium sulfate and the electrode negative. The wool was colored in each instance, that is, with no potential or the electrode positive or negative. From the foregoing it appears evident that when electric current is used with direct colors, the major effects are due to electrolysis rather than electrophoresis.

It was conceived that dispersants of different polarities in conjunction with an applied potential might have some effect, but due to the limitations of time, a complete and organized system of experiments could not be undertaken. Nevertheless, a few trials were made using nonionic, anionic, and cationic dispersing agents in the dye bath, and while the evidence is not complete, it appeared that such conditions may have sufficient effect upon depth of shade, and sensitivity to acids, alkali, and light as to warrant further study.

Acid Colors

In the investigation of acid colors the apparatus consisted of the stationary gauze and rotating loop as previously described. The material used was wool slubbing which was scoured, washed in distilled water, dried, and cut into two gram samples. In each test the two gram sample of slubbing was tied around the rotating loop electrode.

Valence

As with direct colors, the first consideration was that of valence. In each test 2% of dyestuff calculated on the weight of the wool was dissolved in 500 c.c. of distilled water. Dyeings were conducted for ten minutes at a temperature of 180° F. Potential was 12 volts. Runs were made under three conditions; with the electrode to which the wool was attached made positive, negative, and uncharged. The results of these tests were as follows:

Naphthylamine Black 10BR

No potential—just perceptible shade
Wool positive—slight shade.
Wool negative—very slight shade.

This was the first instance in which consistent results were had. However, in these tests as well as in those with dyestuffs of various valences, the color present was in the pattern of the loop electrode rather than as an over-all coloring. This suggested that the pick-up might be due to other factors, which subsequent tests showed to be the case.

			Depth of Dyeing		
Dyestuff	*C.I.#*	*Valence*	*No potential*	*Wool positive*	*Wool negative*
Alizarine Blue SAE	1053	1	slight	medium	slight
Acid Green 2G Conc.....	666	1	slight	fair	slight
Alizarine Blue SAP.....	1054	2	none	medium	none
Kiton F. Orange G Conc..	27	2	none	slight	none
Amaranth Conc.	184	3	none	none	none
Amanil Blue 2B Conc.....	406	4	slight	slight	slight

It is to be noted that in the above set of tests the two alizarine blues are very similar in chemical structure, the only difference being one of valence due to a second sulfonic acid group in the Alizarine Blue SAP.

From the foregoing it appeared that valence had no influence on electrophoresis, and while in certain instances there was some evidence of coloration, this was found later to be due to other factors which will be discussed subsequently.

Neutral pick-up

Another property of acid colors which warranted consideration is their neutral pick-up, that is, how much color is picked up in a neutral bath compared to an acid bath. In order to determine whether application of electrical current would affect the neutral pick-up, tests were run on several colors which, under normal conditions, have a low neutral pick-up. The colors selected were:

Neptune Blue BRA—C.I. 671—Neutral pick-up 15%.

Pontacyl Carmine 2G—C.I. 31—Neutral pick-up 15%.

Naphthylamine Black 10BR—C.I. 246—Neutral pick-up 10%.

Tests made with these colors were similar to those described previously, and the results were as follows:

Neptune Blue BRA

No potential—no color.
Wool positive—medium shade.
Wool negative—no color.

Pontacyl Carmine 2G

No potential—no color.
Wool positive—medium shade.
Wool negative—no color.

Chemical Structure

A third, and very important, characteristic of acid colors is that of chemical structure, and it is possible to select pairs of colors in which slight variations in chemical structures occur. In order to determine whether these differences would affect the results obtained with the use of electrical current a series of tests were conducted (using the following three pairs of colors):

I. Amaranth Conc.—C.I. 184—Tri-valent.

New Fast Scarlet 4R—C.I. 185—Trivalent.

Both of these dyes are exactly alike except for the position of two of the sodium-sulfonate groups. In Amaranth they occupy the 3, 6 positions in the beta-naphthol component, while in the New Fast Scarlet 4R they are at the 6, 8 positions.

II. Calcocid Fast Blue SR—C.I. 208—Tri-valent.

Fast Wool Blue B—C.I. 209—Tri-valent.

Structurally these two dyes are the same with but one exception, this difference being a phenyl group in C.I. 208 in contrast to a tolyl group in C.I. 209.

III. Orange Y Conc.—C.I. 151—Mono-valent.

Croceine Orange Y Conc.—C.I. 26—Mono-valent.

The only difference between these two dyes is that the Orange Y has the sodium sulfonate group para to nitrogen in the first component, while in Crocein Orange Y the same group is in the sixth position of the second component.

With each pair of dyestuffs there were slight differences in the take-up of color when the wool was on the positive electrode. These differences were accentuated upon addition of electrolytes to the dyebath which will be discussed hereafter. The outstanding difference occurred with Amaranth and New Fast Scarlet 4R, the Amaranth being uncolored even in the presence of electrolyte, while with the New Fast Scarlet 4R there was a heavy pick-up.

Effect of Electrolytes

Up to this point the analysis of the tests on acid colors has been confined to the effect of electrical current when dyeings were attempted in solutions of dyestuff in distilled water. Under these conditions, the amount of current passing was very small, the maximum being 0.02 ampere.

With this small current, since the dye ions are negatively charged, as can be determined by cataphoresis measurements, they should be deposited on the fiber to a greater extent when the wool-carrying electrode is made positive. At first glance this seemed to be the case, as in the majority of the tests there was color pick-up only when the wool was positive. However, in all cases, the pick-up was in the pattern of the loop, and moreover, the pattern was always inside the bag-shaped sample. If the action were simply one of migration of the dye ion, due to the electrical charge on the wool, there should have been some evidences of deposition on the outside of the sample. The absence of the latter effect indicates, therefore, that it was not a deposit by electrophoresis but is rather a true dyeing by reason of electrolytically generated acid. In order to establish this point, all the tests described heretofore on the fourteen colors were also carried out with the addition of electrolyte to the dye bath to increase the conductance and hence the electrolysis of the solution.

The electrolyte used was anhydrous sodium sulfate and the amount was 10% based on the weight of the wool sample. This was added to the solution of dyestuff in distilled water. Each dyestuff was tested under three conditions; no potential, wool positive, and wool negative, each at 180° F., time 10 minutes. The potential was 12 volts, the same as in the tests without added electrolyte, but due to increased conductivity 0.5 ampere was obtained.

In this series, with the exception of Amaranth Conc., C.I. 184, the addition of electrolyte caused not only a slightly increased over-all staining under all electrical conditions, but a very strongly increased pattern effect with the wool positive. There was relatively no difference in the dyeings when the wool was negative

and when dyed without potential. However, Amaranth Conc. continued to be the exception in that even with electrolyte giving increased conductivity, there was no coloration under any of the three electrical conditions.

A third series of tests was run in which 2% of sulfuric acid, based on the weight of the wool sample, was substituted for the anhydrous sodium sulfate. The conditions of time, temperature and current were the same as heretofore. As would be expected, heavy over-all dyeings were produced under all conditions, but dyeings without current were slightly stronger than those with the wool positive or negative.

In the above described study of acid colors, over 150 dyeings failed to demonstrate that dye particles or dye ions were deposited on the fiber by the mechanism of electrophoresis. The same dyeings support the feeling that a direct current influenced the pick-up of color only by the mechanism of electrolysis. These conclusions are based upon the following observations:

1.—When electrical potential gave an increased color pick-up it was only at the positive pole, and then in the pattern of the electrode, where an acid condition would exist due to electrolysis.

2.—When an electrolyte was added to increase conductance, the intensity of the dyeing in the electrode pattern was very materially increased. Furthermore, the depth of the dyeing in the pattern closely approached the dyeing when acid was present and no current on.

3.—When acid was added to the dye bath, dyeings were slightly darker with no current than with current on, but the reason for this was obscure. Lack of time prevented further study of this effect.

Vat Colors

Vat colors in paste form consist of dispersions of vat color pigments, and, in the event of an electrical charge on these pigment particles, they should be affected by the polarity of electrodes. How great this action might be was the subject of the third part of this study. The apparatus used was that shown in the sketch. The colors used were regular vat color pastes as obtained in the trade.

The first series was run with yarn which had not been boiled off. The vat color used was Ciba Scarlet G Double Paste, C.I. 1228, 0.5 gr. in 1500 c.c. of distilled water. Ten gram skeins were rotated at 60 RPM in a bath maintained at 180° F. for 10 minutes. Direct current was used and the potential increased from 0 to 100 volts at intervals of 10 volts. The depth of the color on the skeins increased to a maximum at 40-50 volts. There appeared to be a definite decrease in color at 100 volts compared to 50 volts. After this test, all further experiments were made on yarn which had been thoroughly boiled off and bleached, in order to eliminate any possible effect from waxes, oils, mineral matter, and other impurities present in natural cotton. Repeating the above tests several times on bleached cotton produced different results. This led to the belief that the impurities in the grey yarn did affect results, which was further substantiated by experiments in which skeins of bleached yarn were tied with grey yarn. In those experiments the grey tie yarn behaved differently than the bleached yarn.

Since, in the original experiment, maximum results were obtained at 50 volts, two series of tests were run on bleached yarn with 5 other commercial vat color pastes at this voltage. In one series the roller electrode was positive, and in the other series it was negative. These two sets showed no appreciable differences. The current which passed was from 0.0035 to 0.0045 amperes.

From these tests it was seen that the electrical potential had no appreciable effect on the take-up of the vat pigment particles.

The study was continued to see what effect increased conductance due to the addition of an electrolyte would have. Therefore, anhydrous sodium sulfate was added to the dispersion of vat color paste in distilled water. Bleached yarn was used and color concentration, time, temperature, etc., were the same as previously. Skeins were run at 0, 20, 50, and 100 volts, and with the roller electrode positive. They showed a marked increase in pick-up as the potential increased. The skein at 20 volts showed considerable increase over the one without potential. While this last mentioned experiment gave indications of increased color pick-up under the action of electrical current, the question arose as to whether or not this was due to electrophoresis. This question was prompted by the fact that in another set of experiments, with materially increased potential and conductance, there was evidence of reduction of the vat color. Therefore, the study was broadened in an effort definitely to establish the reason for this increased color pick-up.

First investigated was the use of alternating current in which a skein of yarn was treated in the apparatus with a dispersion of the vat pigment in distilled water, using 60 cycles at 110 volts. However, the alternating current proved to be without effect upon pigment pick-up.

The next step involved the modification of the apparatus in order to make the application of the current more effective. To do this, the lower roller which was originally wooden, was replaced by a smooth stainless steel roller to one of whose stainless steel bearings a platinum lead was attached. By this modification the yarn contacted oppositely charged electrode rollers, one of which was, and one of which was not, submerged in the dye bath liquor.

With this modified equipment an extensive series of tests was run under the following conditions:

1.—10 gram skeins bleached cotton yarn.
2.—Volume of dyebath 1500 c.c.
3.—Dyestuff—15% on weight of yarn.
4.—Temperature—room and 195° F.
5.—Time—10 minutes.
6.—Potential— 106 volts D.C.
7.—Polarity—no potential.
submerged spool positive.
submerged spool negative.
8.—Electrolyte.
30 grams sodium sulfate in dye bath.
10 grams sodium sulfate in dye bath.
7½ grams sodium hydroxide in dye bath.

Results obtained may be summarized as follows:

1. At room temperature, when sodium sulfate was present.
   A. No potential—some pick-up of color.
   B. Submerged roller positive—pick-up slightly greater than without potential.
   C. Submerged roller negative—pick-up considerably greater than B.
2. Substitution of sodium hydroxide for sodium sulfate greatly reduced the pigment pick-up under all conditions of current.
3. Reducing the sodium sulfate content from 30 grams to 10 grams, markedly reduced the pigment pick-up with both polarities, but had little effect in the absence of current.
4. One test run at 190° F. and 123 volts instead of 106 volts showed the current to produce less effect, but with the submerged electrode negative, it still gave a greater pick-up than with it positive.
5. When the pigment impregnated yarns were reduced in sodium hydrosulfite and sodium hydroxide, and then oxidized with sodium perborate, the same differences in color intensity persisted as were found in the pigment impregnated state.

As has been noted heretofore, there were indications that where effects of current were observed with vat colors, it might be due to reduction caused by

electrolysis. In order to eliminate this possible factor, and to see what part electrophoresis might play, if any, a set of tests was conducted with carbon black of very fine particle size. This was selected as a material completely incapable of reduction. It was reported by the producer to be negatively charged. Using the original apparatus, ten gram skeins were run at room temperature for 10 minutes, with the potential used at 60 volts. With the carbon black dispersed in distilled water the skeins were all practically black with no differences between no current, yarn positive or yarn negative. The next phase in the study of carbon black was to consider the effect of different types of dispersing agents. Accordingly three sets of tests were run with non-ionic, anionic and cationic dispersing agents, respectively, added to make a concentration of 1 gram per liter prior to the addition of carbon black. With the anionic dispersing agent present there was such a rapid agglomeration of the carbon black particles in the bath that no skeins were run with this dispersing agent.

With the non-ionic dispersing agent present the skeins were a very pale grey color with no differences between no current, skein positive and skein negative.

Where a cationic dispersing agent was used, the skeins were a medium grey color and showed no differences under various current conditions.

While these experiments with carbon black showed no appreciable effect of electrophoresis on pigment pick-up, they did demonstrate that the nature of the dispersing agent may be very important in determining how many pigment particles are picked up by yarns from a dispersion of such particles.

The preceding work with carbon black showed the effect of various types of dispersing agents. This fact, together with the possibility that the charge on vat color pigment particles in paste form might be influenced by dispersing agent, indicated the importance of investigating this point. The first phase of the work on this subject was carried out with the original apparatus and six vat color pastes as they appear in commerce. Dispersions of these pastes in distilled water were prepared, and to one set of three dispersions 1% of a cationic dispersing agent was added, while 1% of an anionic dispersing agent was added to another set. Skeins were run under the regular variations in electrical conditions, that is, no potential, skein positive, and skein negative. The electrical charge made very little difference, but all the skeins run with the cationic dispersing agent were much darker than those with the anionic material.

These results were of sufficient importance to warrant a still further investigation along these lines. In order to eliminate any variable due to materials used in the preparation of the commercial vat pastes, a supply of pure vat color pigment, tetra-brom-indigo, C.I. 1184, free of all foreign material, was prepared for use in the study of dispersants.

As this phase of the study was not concerned with the influence of an electrical current, the apparatus was not used, and the skeins were run in regular dye-beakers.

After preparation of the baths by adding the dispersing agents and the color pigment to CO_2-free distilled water, skeins were wet out in distilled water, entered at room temperature and, after raising the bath to 180° F., were run for half an hour with frequent turning. They were then removed, extracted and dried. This procedure was used with both cotton and wool skeins.

To examine thoroughly the effects of dispersing agents on cotton, ten non-ionic, nine anionic, and thirteen cationic agents were tested, using the purified tetra-brom-indigo as the vat pigment in all cases. In addition to the use of the baths consisting of dispersants, pigment and water, subsequent baths were prepared which were made acid with acetic acid or alkaline with sodium hydroxide to test the effect of pH. The conditions of pH may be tabulated as follows:

Type of Dispersant	*pH without Acid or Alkali*	*pH with 1 cc. 56% Acetic Acid*	*pH with 1 cc. 40% Sodium Hydroxide*
10 Non-ionic	7.0 — 3.45	2.85—3.05	11.8—11.9
9 Anionic	8.15—10.35	2.9 —3.0	11.8—11.95
13 Cationic	9.5 — 4.65	3.0 —3.2	11.8—11.95

Reviewing the results of the dyeings, a further tabulation may be employed.

Cotton Skeins

Type of Dispersant	*Dispersant and dye*	*With Acetic Acid*	*With Sodium Hydroxide*
10 Non-ionic	Practically uncolored	Pale blue	Uncolored
9 Anionic	Practically uncolored	Pale blue	Uncolored
13 Cationic	Well colored	Well colored	light blue

In connection with the foregoing table certain explanations should be made:

1. With both non-ionic and anionic dispersing agents present, the color pick-up was always less than with color in distilled water, brought to the same pH. Evidently these two types of dispersants acted as protective colloids and kept the vat pigment off the yarn.

2. The cationic agents appear to possess certain characteristics which yield unpredictable variations in pick-up. Nevertheless, it should be noted that, regardless of these variations, the pick-up was always greater than with non-ionic or anionic agents present. Furthermore, in some instances the pick-up was much greater than with color in distilled water brought to the same pH.

Turning to wool, the same plan was followed. In these tests, the results ran parallel to those on cotton and may be tabulated similarly.

Wool Skeins

Type of Dispersant	*Dispersant and dye*	*With Acetic Acid*	*With Sodium Hydroxide*
10 Ion-ionic	Practically uncolored	Deeper than cotton	Practically white
9 Anionic	Practically uncolored	Deeper than cotton	Practically white
13 Cationic	Well colored	Variable results	Very light

Seeking an explanation of these effects, the first feature examined was the chemical nature of the dispersants. For example, five cationic dispersing agents were prepared by condensing a fatty acid with several organic amines to contain one to five nitrogen atoms respectively. Using these, it was found that the pick-up on cotton skeins decreased progressively as the number of nitrogens in the agent increased. On the other hand, using another product having several nitrogen atoms gave as deep a shade as one with only a single nitrogen. Furthermore, examination of the chemical structures of

several of the other dispersants seemed to divulge no common factor which could be applied in interpreting the results. The cationic dispersants were of various types, being:

Imidazols
Fatty Amides
Fatty Carbamates
Quaternary Ammonium Compounds

Although over five hundred dyeings were made in this study of dispersants, time did not permit a broad enough investigation to establish a definite relationship between chemical constitution and color pick-up. This could, to advantage, be the basis of extensive research.

The second and more promising characteristic seemed to be that of the pH of the bath, and to examine this, dispersions of the vat pigment in distilled water were adjusted by means of acetic Acid or sodium hydroxide so that a series of the following pH values was developed:

pH 1.65, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

Using sulfuric acid or sodium hydroxide, another series of dispersions was prepared having pH values of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

With cotton at pH 11, the skein was practically white but as the pH decreased to the acid side, the depth of shade gradually increased to a maximum at pH 3. Below pH 3, the shade then decreased. With wool, at pH 11, a slight coloration developed and the depth increased as the pH dropped, being greatest at the lowest points, i.e., pH 1.65 with acetic acid and pH 1 with sulfuric acid.

In each instance where the maximum depth of shade on the yarn was obtained there was practically complete exhaustion of the dye bath.

Summarizing the results, it may be concluded that:

1. The pH of the dye bath is an important factor in the amount of vat pigments taken up by fibers from a dispersion, the greatest pick-up occurring at a low pH. This applies both to cotton and wool.

2. Anionic and non-ionic dispersants reduce the pick-up in varying degree while cationic agents increase the pick-up, complete exhaustion being obtained in some cases.

Concurrent with the preceding tests, others were run wherein the electrical apparatus was used for the purpose of rotating the skeins without current.

One series was run in which three dyeings were made using sodium, calcium and aluminum nitrates, representing mono-, di- and tri-valent cations, and in order that the dye baths should contain equivalent concentrations of ionic charge, the salt solutions were made 0.27 normal. After making up the baths, the pH of the one containing aluminum nitrate was found to be 3 and the others were then adjusted to the same value with nitric acid.

Cotton skeins were run 10 minutes at room temperature with equal amounts of a commercial vat paste added to each dye bath. With the tri-valent aluminum cation present, the pigment pick-up was slightly greater than with the other two. The skein from the dye bath containing sodium nitrate showed greater pick-up than one with an equivalent amount of sodium sulfate from another series. Either the singly charged nitrate ion is more effective than the doubly charged sulfate ion, or the lower pH of the sodium nitrate bath, i.e., 3 instead of 5-6 for the sodium sulfate bath is responsible. The lower pH of the nitrate solution is probably the determining factor.

In another set of tests, six commercial vat pastes were used. Each color was run three ways, namely: with sodium sulfate, sodium hydroxide, and acetic acid in separate dye baths. The pH values of the various dispersions of vat colors containing these chemicals were as follows:

sodium sulfate	— 4.80 —8.00
sodium hydroxide	—11.30—11.83
acetic acid	— 3.05— 3.85

When sodium sulfate was used, the skeins were a medium shade, with caustic soda present the skeins were all very light while the dyeings made in the presence of acetic acid were all very much darker than those with sodium sulfate.

As this extended study with vat colors progressed, it further substantiated the conclusion that the pH of the dye bath was a major factor in determining the amount of pigment color taken up by the yarn. Furthermore, it tended to verify the conclusion reached earlier in this work, that the differences noted when electrical potential was applied were due to electrolysis with its attendant local change in pH, rather than to electrophoresis.

Summary

At the outset, this study was undertaken in an effort to determine whether the dyeing properties of soluble colors with a charged dye ion, or of vat pigment particles bearing an electrical charge would be affected by applying electrical charge. As the work progressed, the results indicated that the chemical effects produced by the electric current were the most important. This led to broadening of the study in an effort to find the explanation of these results. It became evident that electrophoresis played a very minor part, if any, in the effects produced. When electrical current did affect the dyeing properties, it was largely due to a change in pH caused by electrolysis of the dyebath in the vicinity of one of the electrodes. Furthermore, dispersing agents of the non-ionic, anionic, and cationic types had a very material effect, particularly with vat color pigments.

This survey includes several hundred experiments on cotton and wool fibers, using numerous direct, acid, or vat colors. These experiments were carried out under varying conditions of electrical potential and current, temperature, pH; with several types and concentrations of electrolytes, and also with different types of dispersing agents.

Conclusions

From an analysis of the results obtained the following conclusions appear to be justified:

1. There is no evidence that the dyeing properties of any of the direct and acid colors studied were affected by any electrophoresis (faster migration of dye ions toward the fibers of opposite charge) at the electrical potential applied in this work.

2. The dyeing properties of many direct and acid colors can be materially affected by local changes of pH of the dye bath, caused by electrolysis resulting from the application of electrical current.

3. In the range of potential and current studied, there is no ovidence that the pick-up of vat color pigments is appreciably affected by the action of electrical current on the charged pigment particles.

Two additional conclusions can be drawn which might be the basis of extensive commercial development:

4. Some cationic dispersing agents materially increased the pick-up of vat pigment particles. It is possible, thereby, to obtain practically complete exhaustion.

5. By varying the pH of a dispersion of vat color pigment, the pick-up can be controlled from a condition of practically no color pick-up ,to one of practically complete exhaustion.

Dispersing Agents used in this study

Non-ionic.

Solvadine E—Ciba Co., Inc.
RL 214—Arnold Hoffman & Co.
Sharples Non-ionic No. 218—Sharples Chemical Co.
Alrosol—Alrose Chemical Co.
Alromine S—Alrose Chemical Co.
Neutronyx 834—Onyx Oil & Chemical Co.
Neutronyx 331—Onyx Oil & Chemical Co.
Neutronyx 330—Onyx Oil & Chemical Co.
Nonisol 100—Alrose Chemical Co.
Nonisol 200—Alrose Chemical Co.
Nonisol 300—Alrose Chemical Co.

(Concluded on Page P704)

Treasurer's Report

Treasurer's Report

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
STATEMENT SUMMARIZING RECEIPTS AND DISBURSEMENTS FOR THE YEAR ENDING JULY 31, 1947

			Allocation of Funds — Special Research Projects							
	Total	General Research	International Salt Company	Association of American Soap and Glycerine Producers	U. S. Army Quartermaster Corps (Note)	U. S. Army Chemical Warfare Service (Note)	American Viscose Co. Scholarship Fund	Olney Medal Fund	Merchandise	General
Receipts:										
Membership dues:										
Corporate memberships	$ 33,850.00	$31,607.50		$.....	$.....	$.....	$.....	$.....	$.....	$ 2,242.50
Sustaining memberships	450.00	450.00		.....	.....	.....	.....	.....	.....	.....
Senior, Junior, Associate and Student Memberships	35,632.50	.....		.....	.....	.....	.....	.....	.....	35,632.50
Total membership dues	$ 69,932.50	$32,057.50		$.....	$.....	$.....	$.....	$.....	$.....	$37,875.00
American Viscose Company—scholarship donation	1,500.00	.....		.....	.....	.....	1,500.00	.....	.....	.....
Annual meeting registrations—net amount received from Northern New England Section	1,297.69	.....		.....	.....	.....	.....	.....	.....	1,297.69
Olney Medal Fund—donated by Howes Publishing Company	1,500.00	.....		.....	.....	.....	.....	1,500.00	.....	.....
Dividends and interest received	1,410.60	811.00		.....	.....	.....	.....	174.60	.....	425.00
Miscellaneous income, per accompanying schedule	8,697.96	432.09		.....	.....	.....	.....	.....	8,265.87	.....
Special research projects	9,471.89	.....		250.00	5,443.47	3,778.42	.....	.....	.....	.....
Total receipts	$ 93,810.64	$33,300.59		$250.00	$ 5,443.47	$3,778.42	$1,500.00	$1,674.60	$8,265.87	$39,597.69
Disbursements:										
Research salaries and expenses	$ 40,487.04	$20,935.03	$3,011.32	$ 11.70	$10,773.60	$5,755.39	$.....	$.....	$.....	$.....
Howes Publishing Company—Subscriptions to American Dyestuff Reporter	12,466.88	.....	.....	.....	.....	.....	.....	.....	45.00	12,421.88
Disbursements for account of American Viscose Company scholarship	1,762.74	.....	.....	.....	.....	.....	1,762.74	.....	.....	.....
Disbursements for account of Olney Medal Fund	5.00	.....	.....	.....	.....	.....	.....	5.00	.....	.....
Secretary's expenses, clerical assistance, etc.	6,277.57	69.04	.....	.....	.....	.....	.....	.....	434.94	5,773.59
Printing, etc.	295.90	77.00	.....	.....	.....	.....	.....	.....	1.75	217.15
Publicity	965.30	750.34	.....	.....	.....	.....	.....	.....	.....	214.96
Merchandise purchases and expenses	5,951.14	.....	.....	.....	.....	.....	.....	.....	5,951.14	.....
Audit of treasurer's and secretary's accounts	150.00	.....	.....	.....	.....	.....	.....	.....	.....	150.00
Section membership allowances	1,404.67	.....	.....	.....	.....	.....	.....	.....	.....	1,404.67
Trade association dues	100.00	.....	.....	.....	.....	.....	.....	.....	.....	100.00
Bonds for treasurer and secretary	80.00	.....	.....	.....	.....	.....	.....	.....	.....	80.00
Other general expenses	1,000.83	.....	.....	.....	.....	.....	.....	.....	.....	1,000.83
Total disbursements	$ 70,947.07	$21,831.41	$3,011.32	$ 11.70	$10,773.60	$5,755.39	$1,762.74	$ 5.00	$6,432.83	$21,363.08
Excess (defieicncy) of receipts over disbursements	$ 22,863.57	$11,469.18	($3,011.32)	$238.30	($ 5,330.13)	($1,976.97)	($ 262.74)	$1,669.60	$1,833.04	$18,234.61
Cash in banks, advance expense fund and investments (at cost), July 31, 1946	129,026.43	62,930.25	7,931.24	.....	.....	.....	888.28	3,748.28	6,948.34	46,580.04
Cash in banks, advance expense funds and investments (at cost), July 31, 1947	$151,890.00	$74,399.43	$4,919.92	$238.30	($ 5,330.13)	($1,976.97)	$ 625.54	$5,417.88	$8,781.38	$64,814.65

Summary of cash in banks, advance expense funds and investments at July 31 1947:

Cash in banks	$ 74,858.58
Advance expense funds	1,300.00
United States Savings Bonds, Series F (value at maturity, $40,000; redemption value at July 31, 1947, $32,040), at cost	29,600.00
United States Savings Bonds, Series G (face value $20,000; redemption value at July 31, 1947, $19,560), at cost	20,000.00
$10,000 United States Treasury Bonds 2½% 1967–72 at cost (value based on market quotations July 31, 1947, $10,260)	10,017.68
Other marketable securities, at cost (value based on market quotations July 31, 1947, $13,823)	16,113.74
	$151,890.00

Note:—The Association has undertaken research projects for U. S. Quartermaster Corps and U. S. Army Chemical Warfare Service, covered by negotiated contracts under the terms of which the Association is to be reimbursed for salaries and expenses in total amounts not exceeding $25,000 and $40,000 on the respective government agency contracts. The balances of $5,330.13 and $1,976.97 shown above as deficiencies of receipts over disbursements for these projects at July 31, 1947 represent salaries and expenses which had not been reimbursed by the U. S. Government as of that date.

Respectfully submitted:
W. R. MOORHOUSE, *Treasurer*
American Association of Textile Chemists and Colorists.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS
SCHEDULE OF MISCELLANEOUS INCOME FOR THE YEAR ENDING JULY 31, 1947

Miscellaneous income:		
Research:		
Launder-Ometer royalties	$ 425.00	
Rebate on apparatus purchased	7.09	$ 432.09
Merchandise:		
Multi-fibre cloth	$ 519.50	
Yearbooks	2,057.36	
Dye standards	230.86	
Knitted tubing	251.05	
Dyestuff Reporters and reprints	446.75	
Crock-meter cloth	477.60	
Crock meters	1,343.90	
Moth cloth	685.25	
Flammability testers	200.00	
Flammability tester royalties	1,120.00	
Water-test apparatus	510.25	
Gas fading units	157.05	
Color transferenct charts	200.00	
Analytical methods	4.00	
Buttons	50.00	
Waste paper sales	10.80	
Dry cleaning unit	1.50	8,265.87
Total miscellaneous income		$8,697.96

Auditor's Report

PRICE, WATERHOUSE & CO.
75 Federal Street
Boston 10

September 30, 1947

To the Members of the
American Association of Textile Chemists and Colorists:

We have made an examination of the accompanying statement and supporting schedule summarizing the receipts and disbursements of the treasurer and secretary of the American Association of Textile Chemists and Colorists for the year ending July 31, 1947. In connection therewith, we examined or tested the cashbooks and other records supporting the receipts and disbursements, by methods and to the extent we deemed appropriate, but we did not communicate with the members to confirm the amount of recorded receipts from dues and subscriptions.

In our opinion, the accompanying statement, together with the supporting schedule, fairly summarizes the recorded receipts and disbursements of the association for the year ending July 31, 1947, and the balances of cash in banks, advance expense funds and securities owned as of that date.

Price, Waterhouse & Co.

Silver Anniversary Philadelphia Section

THE Philadelphia Section celebrated its Silver Anniversary with a reception and dinner-dance held at the Penn-Sheraton Hotel, 39th and Chestnut Streets, Saturday night, November 8.

Cocktails were served in the Della Robbia Room from 6:00 to 7:30 p.m., which was followed by dinner. Walter Fancourt, 3rd, Philadelphia Chairman, then introduced our National President, Henry F. Herrmann, who welcomed all those present and expressed his pleasure in the way the Philadelphia Section celebrated its Silver Jubilee. Mr. Fancourt then announced the results of the election for officers for the year 1948 for the Philadelphia Section as follows:

Chairman: A. M. Gordon
Vice-Chairman: James Dixon
Treasurer: A. E. Raimo
Secretary: Thomas H. Hart

Sectional Committee:
F. V. Traut
E. C. Diehl
W. R. Smith
R. L. Jones

Councilors:
W. F. Fancourt
C. R. Baeringer
L. O. Koons
Prof. P. Theel
A. W. Etchells

These members were enthusiastically applauded.

After the business meeting there was a fine show, which was followed by dancing until one o'clock. There were 270 present.

Respectfully submitted,
A. E. RAIMO, *Secretary.*

Electrical Charge

(Concluded from Page P702)

Anionic
Ahcovel F—Arnold Hoffman & Co.
Ahcowet RS—Arnold Hoffman & Co.
Oroset L—Onyx Oil & Chemical Co.
Maprofix—Onyx Oil & Chemical Co.
Xynomine Paste 33—Onyx Oil & Chemical Co.
N. S. A. E. Paste—Onyx Oil & Chemical Co.
Rinsynol 20 L—Alrose Chemical Co.
Alroterge—Alrose Chemical Co.
Sorbit AC—Alrose Chemical Co.

Cationic
Ahcovel A—Arnold Hoffman & Co.
RL 126 C—Arnold Hoffman & Co.
Nos. 2, 3, 4, 5, 6, 7—Special products prepared by Arnold Hoffman & Co. for this study.
Acidol 25 A—Onyx Oil & Chemical Co.
Onyxson L G—Onyx Oil & Chemical Co.
BTC 50—Onyx Oil & Chemical Co.
Amine O—Alrose Chemical Co.
Alromine R—Alrose Chemical Co.

References

1. "Factors Which Cause or Prevent Agglomeration of Pigment Particles"—R. I. Section Intersectional Contest Committee, American Dyestuff Reporter—1946—Vol. 35, No. 1, p. 3.

Acknowledgment

We wish to express our appreciation to the following institutions and companies for their contribution of the services of their personnel and equipment:
The Apponaug Company.
Arnold Hoffman & Co.
Brown University.
Ciba Company, Inc.
Cranston Print Works.
Hart Products Co.
Rhode Island School of Design.
Rhode Island State College.
Sayles Finishing Plants
Slatersville Finishing Co.
Wanskuck Company.

We also wish to express our appreciation to the following companies for the materials contributed by them which were used in this study:
Alrose Chemical Co.
American Thread Co.
Arnold Hoffman & Co.
Ciba Company, Inc.
E. I. duPont de Nemours Co.
Lloyd Mfg. Company.
Onyx Oil & Chemical Co.
Wanskuck Company.

Intersectional Contest —

Weather Protective Treatments for Cotton Duck*

Presented by the
SOUTHEASTERN SECTION

COMMITTEE

J. D. Dean, *Chairman*
Winston B. Strickland
Jack E. Sands
Robert O. Simmons
Dr. Howard M. Waddle
Mary Ann Grimes
P. J. Fynn, *Speaker*

THE Cotton Subcommittee of the House Committee on Agriculture has recently conducted a survey of the competitive position of cotton by major end-use markets. Among the markets surveyed, the use of cotton in the manufacture of awnings, tents, and tarpaulins in 1939 was estimated at 129,720 bales. This, coupled with the additional amounts of cotton used in tobacco shade cloth, seed bed covers, etc., constitutes a sizeable market where the position of cotton could be strengthened if its resistance to deterioration by weather were increased. Thus the production of weather-protective treatments for cotton has been a subject of considerable interest to the textile industry. Because of its economic importance, the production of weather-protective treatments that effectively extend the service life of cotton fabrics has been the subject of extensive investigation. The present paper is concerned with the evaluation of certain pigment and resin finishes, many of experimental nature, designed primarily for application to awning ducks.

The most obvious results of the action of weather upon cotton fabrics for out-of-door use are deterioration in appearance and strength. Although these changes are produced by the number of inter-related and concomitant factors which make up weather, sunlight is the chief factor. In general, the biological factor, that is, the action of living organisms such as fungi and bacteria, is next in importance. Wind, rain, temperature changes, freezing, atmospheric contaminants like smoke and fumes, are usually of little importance, although under special localized conditions they may assume serious proportions.

The exact mechanism of the weakening of cotton by sunlight is not known, but most investigators concur that it is due to photochemical action of an oxidative nature. The work of Stillings and Van Nostrand (*1*) indicates that there is a photochemical effect on cellulose in the absence of oxygen, but Barr and Hadfield (*2*), and, more recently, Egerton (*3*) found no degradation of practical significance occurring when cotton was exposed to light while surrounded by an inert atmosphere. That exposure to sunlight progressively increases both the reducing power of cotton cellulose and its fluidity in cuprammonium solution is accepted as evidence that the degree of polymerization of the cellulose is decreased with a shortening of the average length of the cellulose molecules upon which the strength of the cotton fiber depends. The presence of certain metals, pigments, dyestuffs, or water vapor accelerates the action of light.

Biological action is capable of destroying cotton independently of the action of sunlight. When the relative humidity remains extremely high, when there is incomplete drying between rains, and especially, when the fabric is in contact with moist soil, fungi and bacteria cause rapid breakdown of the fabric. While bacterial action becomes significant only when the fabric is buried in the ground or submerged in water, the conditions which promote profuse fungal growth, on the other hand, are more generally existant. Biological attack is greater on gray fabrics than on purified fabrics from which have been removed gums, waxes, nitrogenous and carbohydrate materials, and other natural impurities, an immediate source of sustenance for microorganisms (*4*, *5*).

Countless attempts have been made to increase the durability of fabrics intended for outdoor use by (1) experimenting with fabric construction, (2) chemically modifying the cellulose, or (3) by applying protective finishes and coatings. But gains in one direction have been frequently accompanied by coincidental losses in another: Fabric construction is limited by the end use of the goods; chemical modification renders cellulose more susceptible to destruction by sunlight although increasing biological resistance; and fungicides, even when effective, usually accelerate photochemical breakdown (*6*), while the effective weatherproofing and light-screening additive finishes so far produced have usually resulted in a stiff boardy product without many of the properties of a textile fabric. The ideal finish would seal the fibers against moisture, screen the fabric from the deleterious action of light, and inhibit biological action without being injurious to the user. It would be permanent with no adverse or objectionable effect upon the strength, weight, appearance, body, and hand of the fabric, and it would be simple and inexpensive to apply.

Purpose of Tests

It was desired in the present investigation (1) to formulate a treatment capable of protecting cotton fabric against weather without adverse effect on the hand or finish of the cloth; (2) to test the various experimental formulations by exposure to actual weather; and (3) to collect data on the behavior of the finishes under artificial conditions of exposure that would be of value in the study of accelerated aging of textiles.

It was realized that these purposes could not be fully accomplished in time for the presentation of complete results in this paper. However, sufficient data have been obtained to permit the evaluation of the relative merits of the several finishes and at least to permit distinction between the promising treatments and the failures. The exposures are being continued.

Selection of Fabrics and Finishes

A plainly woven army duck made of unsized yarns and weighing 10.6 ounces

* Presented at Intersectional Contest, National Convention, Chicago, Ill., October 25, 1947.

per square yard was selected as a fabric representative of the type used in out-of-door service and as not too heavy to show significant tendering of unprotected samples in the available time. Both gray and bleached duck samples were used to provide a check on the effects of natural impurities. The bleached fabric had been well scoured and given a light peroxide treatment sufficient to remove the motes. A few selected samples of a heavier awning fabric having yarn-dyed woven stripes were used with the object of determining whether or not a finish could be formulated to protect this type of material without dulling the colors.

The finishes chosen fall into four groups: clear resins alone; resin-bound pigments; pigments precipitated *in situ;* and pigments *in situ* after-treated with the clear resins. There were several theoretical considerations in favor of using resins as a weather protective. A continuous film on fibers and yarns would in some cases shield them from sunlight and retard the moisture take-up which favors biological action. The film might also act as a physical barrier against microbiological infection as suggested by Siu and White (7). Furthermore, a clear resin treatment, if successful, could be used on colored materials such as striped awnings without masking the colors.

Methyl methacrylate resin, although known to have no value as a screen against sunlight, was used in order to find out whether or not it imposed a physical barrier against biological attack. Oil-modified alkyd resin was selected for test because of its ready availability and its common use in industry as a binder for pigments. Urea-formaldehyde was chosen as one of the resins because in some previous work on its use as a pigment binder the incidental observation was made that this resin rendered the fabric more resistant to breakdown by radiation from a carbon arc.

The undesirable initial strength loss inevitable in the application of urea-formaldehyde was discounted in the present work. It was thought that where the resin was applied to heavy duck fabrics of high strength, the treatment losses might be tolerated if sufficient advantage were to be gained. It is interesting that subsequent to the selection of urea-formaldehyde for these tests, references were found in the literature in which mention was made of the light-screening qualities of this compound *(6, 8, 9)*. But these previous observations were generally incidental to its use for purposes other than weather-protective treatments.

The pigments used in the present investigation were selected either because of known light-protecting or fungicidal properties or because knowledge was desired of the protective action of colored pigments which would be compatible with the color of dyed fabrics.

Lead chromate was selected because applied as a pigment or precipitated in the fabric it offers protection against sunlight. Its use on tobacco shade cloth was reported by Holman and Jarrel *(10)* as early as 1927.

Mineral khaki and chromium oxide have also been much used as weather-protecting treatments. Fargher and his associates at Shirley Institute favor chromium oxide and intimate that the chromium in mineral khaki is the effective protecting agent.

Raw sienna was selected because in previous work it had shown promise as a light-screening pigment.

Monastral Fast Blue was chosen because it represents a new type of color pigment which was reputed to have light-screening properties.

Milban (zinc dimethyl dithiocarbamate), and basic copper carbonate were selected to utilize their fungicidal properties in combination with the light-screening action of the resin-pigment combination.

Antimony oxide is a convenient white pigment much used in flameproofing, and was chosen to ascertain whether it would be effective as a screening pigment; or whether, as mentioned in Egerton's paper (3), it would be in the class of white pigments that, in the presence of moisture, catalyze the action of sunlight on cotton.

Application of Treatments

Wherever possible, the treatments were applied from water solution or emulsion rather than from organic solvents with their attending problems of cost, fire hazard, and toxicity.

Lead chromate was formed *in situ* by successive paddings of lead acetate and potassium dichromate, followed by jig washing and tenter drying. Mineral khaki was produced by padding with iron and chromium acetate solution; after drying it was developed in hot alkali and washed on a jig and then tenter-dried. Separate pieces of cloth treated with the lead chromate or mineral khaki were then respectively padded with (1) water-soluble urea-formaldehyde monomer and catalyst; (2) a petroleum solvent solution of oil-modified alkyd resin; and (3) an aqueous dispersion of methyl methacrylate. The samples were then finished by drying. The urea-formaldehyde was cured after drying by heating for 3 minutes at 300° F.

In the same manner, the resins were applied to plain samples which had not been previously treated with pigments.

For samples treated with resin-bound pigments, the pigments were dispersed in the respective resin solution or emulsion, padded, and dried or cured as required.

In all cases the concentrations of solids were adjusted to give 2-percent take-up of pigments and 5-percent take-up of resin on the dry weight of the cloth. The take-up of resin was limited to 5-percent because at that concentration it did not perceptibly affect the hand of the material used.

All finishes were applied on a micro-set 2-bowl laboratory padder with rolls 20 inches wide, which was also used to express the water from jig-washed samples. A 20-inch stainless steel laboratory jig was used where necessary for developing and washing finishes. Samples were dried to original width on a standard clip tenter with circulated steam-heated air. For the curing of resin finishes a skein dryer was adapted to the purpose.

Exposure Methods

Taking into account the effect of geographical location on weathering, twelve samples were selected from among a larger number exposed at the Southern Regional Research Laboratory at New Orleans, Louisiana, for exposure at three other scattered locations, as follows: at the Pepperell Manufacturing Company at Lindale, Georgia; the West Point Manufacturing Company at Shawmut, Alabama; and the Texas Agricultural Experiment Station at College Station, Texas. The Georgia and Alabama stations can be classed as industrial locations while those in Texas and Louisiana can be classed as nonindustrial.

The New Orleans location is particularly suitable for conducting out-of-doors exposure tests. On the shore of a large lake and about 5 miles from the nearest industrial plants, it is surrounded in all directions by water or verdant, uncultivated, open country, and is separated from the city by an extensive park. The air is thus particularly free of contaminants. For example, continual measurements of atmospheric acidity during the exposure period gave negative results. Rainwater pH values averaged 6.5 units, and the specific conductivity of pure water was raised from 0.5 to only 62 micro-mhos by 5000 liters of atmosphere, sampled continuously at the rate of a few liters per day, and bubbled through 0.3 liters of water. (By comparison, a 0.1 of a 1-percent solution of sulfur dioxide has a specific conductivity of over 2000 micro-mhos.)

At the other nonindustrial location in Texas comparable conditions prevailed. At the industrial locations the exposures were made on the mill roof tops.

The samples sent to the cooperating

stations for exposure were all previously mounted, drawn just taut enough to remain flat, and fastened with copper tacks to unpainted, seasoned pinewood frames. The pieces exposed at New Orleans were fastened with copper tacks or staples to painted wooden frames having 6-inch openings between supports. All exposures were made with the sample faces inclined at an angle of 45° facing south in a spot where they received unshaded sunlight throughout the day.

Exposures were made from March 1 until August 15, both under controlled and uncontrolled conditions. That is, some samples were exposed to total weather and some under regulated or artificial conditions.

Certain treatments were selected for exposure in a specially built solar-exposure cabinet constructed at the Southern Regional Research Laboratory, *(11)*, to aid in the study of the effects on cotton of both whole sunlight and of different spectral regions of sunlight when isolated from the other factors of weather. For maximum utilization of the available radiation, the cabinet is built to automatically follow the apparent motion of the sun across the sky. The samples are mounted flat against the chromium-plated tops of thin copper boxes in which is circulated water maintained at a thermostatically controlled temperature. Keeping the water circulating through the copper cells at a constant temperature exercises a certain measure of control on the humidity of the ambient air in the cabinet. The air in the cabinet is constantly replaced by air drawn over soda-lime contained in special air filters. For the present experiments the cabinet was fitted with panes of clear Corex, a glass having high transmission values for all wavelengths of light present in sunlight at the earth's surface.

In addition to the exposures in the special cabinet in New Orleans, all of the finished samples were exposed in duplicate to carbon arc radiation. The carbon arc exposures were made for the purpose of testing the relative efficiencies of the various finishes in shielding the fabric from ultraviolet radiation, as well as to discover—by comparison of results with the exposures made out of doors—whether or not the weathering machine, when specially adapted, could be used to evaluate the light-protective properties of various finishes. Samples were exposed for 50 hours to light from the unshielded arc in a carbon arc weathering machine which was changed to provide temperature and humidity conditions more nearly those obtained in natural outdoor exposures. A heavy cotton net bagging hung around the outside of the rotating sample rack was kept saturated with water. A ring of air jets was installed in the bottom of the machine placed so as to blow a stream of filtered compressed air across the sample faces. The carbons were partially enclosed by metal shields to prevent air turbulence from blowing out the arc flame. Fine wire thermocouples attached to the surfaces of certain of the rotating samples were connected by means of slip rings to a temperature recorder to aid in measurement and control. The air turbulence aided evaporation of water from the bagging which increased the ambient air humidity and decreased the sample surface temperatures. The samples were run dry throughout the test.

Methods of Measuring Exposure Effects

It is recognized that the most sensitive method of detecting cellulose degradation is the measurement of cuprammonium fluidity changes in the samples; but in the present investigation, because of the practical difficulties of removing the majority of the resin treatments, especially urea-formaldehyde, preventing the solution of the samples in cuprammonium hydroxide, breaking strength data were relied on almost entirely as an index of the degradation suffered during exposure by the treated samples. Cuprammonium fluidities of the untreated samples, however, were determined according to the techniques described in A.S.T.M. method D539-40T with corrections applied for velocity gradient *(12)*.

The breaking strength tests were made on strips of sample cut 6 inches long in the warp direction by 1½ inches wide and for the original treated but unweathered samples frayed to 1-inch width, but for weathered samples, to a thread count equal to the number of yarns in 1 inch of the original piece. A pendulum-type breaking strength tester was used with 3 inches between the jaws. The samples were broken after at least 4 hours of conditioning at 70° F. and 65 percent relative humidity.

The pH values of samples were determined before and after exposure on duplicate portions of the samples after reducing them to a powder in a mill and allowing each portion to stand overnight in 10 times its weight of distilled water. A pH meter with glass-calomel electrodes was used for the measurements.

As a means of gauging the ability of the sample to some to moisture equilibrium with its surroundings, conditioned samples were exposed to 100 percent humidity conditions in a fog chamber and weighed at the end of 1-, 2-, and 4-hour periods.

Meteorological Observations

Rainfall, temperature, and humidity records were kept on a daily basis at all stations, and average values of temperature and relative humidity at all stations for the exposure period have been prepared and are presented in Table I. It is interesting to note that the weather conditions at all of the stations were very similar. At New Orleans the total amount of radiant energy received by the samples was continuously recorded and integrated, and these values, in gram calories per square centimeter, are also listed in Table I.

Results

In Table II the weather exposure results, which are the average values of the replicate samples wherever used and single values of samples exposed only at New Orleans, are presented in four groups corresponding to the four types of treatments previously mentioned, with further subdivision into gray and bleached samples in the first two groups. In each group, the treatments are listed in descending order of excellence. All results are listed on the basis of 24 weeks' exposure.

Figure 1 presents graphically the results of 24 weeks' exposure of the bleached duck samples.

The resin-bound pigments appeared to offer better protection than treatments in the other groups, as evidenced, for example, by the use of urea-formaldehyde and lead chromate, either alone or in

TABLE I
METEOROLOGICAL DATA FOR 24 WEEKS OF EXPOSURE

Location	Days With More Than 50% Sunshine	Radiant Energy Incident Upon the Samples (g.cal.cm^{-2})	Rainfall (Inches)	Temperature Average °F	Relative Humidity Average %	Effect on Control Samples % Loss of Strength Fluidity (Rhes)			
						Gray	Bleached	Gray	Bleached
Louisiana 45° South	83	62434	28	72.4	71.1	38	41	9.05	15.0
Normal Incidence Solar Cabinet	83	99301	—	89.0	55.8	53	37	22.0	15.2
Alabama	—	——	27	71.0	71.0	35	40	16.8	19.9
Georgia	123	——	22	72.1	62.5	61	66	25.7	30.6
Texas	118	——	20	75.5	85.2	32	24	9.25	11.4

Table II
Strength Losses for All Treatments and Untreated Controls
24 Weeks' Exposure

CLEAR RESINS			RESIN BOUND PIGMENTS			IN SITU PIGMENTS		IN SITU PIGMENTS WITH RESINS	
	% Breaking Strength Loss			% Breaking Strength Loss					
Treatment	Gray	Bleached	Treatment	Gray	Bleached	Treatment	% B.S.L. Bleached	Treatment	% B.S.L. Bleached
U.F. 10%	9	—	U.F. $PbCrO_4$	0	0	$PbCrO_4$	19*	U.F. $PbCrO_4$	6*
U.F. 5%	14*	25*	U.F. Cr_2O_3	0	0	Mineral Khaki	33*	Alkyd $PbCrO_4$	12
Alkyd Methyl Methacrylate	42*	46*	U.F. Sb_2O_3	—	0			U.F. Mineral Khaki	22*
	41	51	U.F. Sienna	—	5*				
			Alkyd $PbCrO_4$	10	3				
			U.F. Monastral Fast Blue	—	5				
			U.F. $CuCO_3$	—	10				
			U.F. Milban	30	28*				
			Alkyd Milban	39	31				

UNTREATED CONTROL SAMPLES	
% Breaking Strength Loss	
Gray	Bleached
42*	43*

*4 station average.

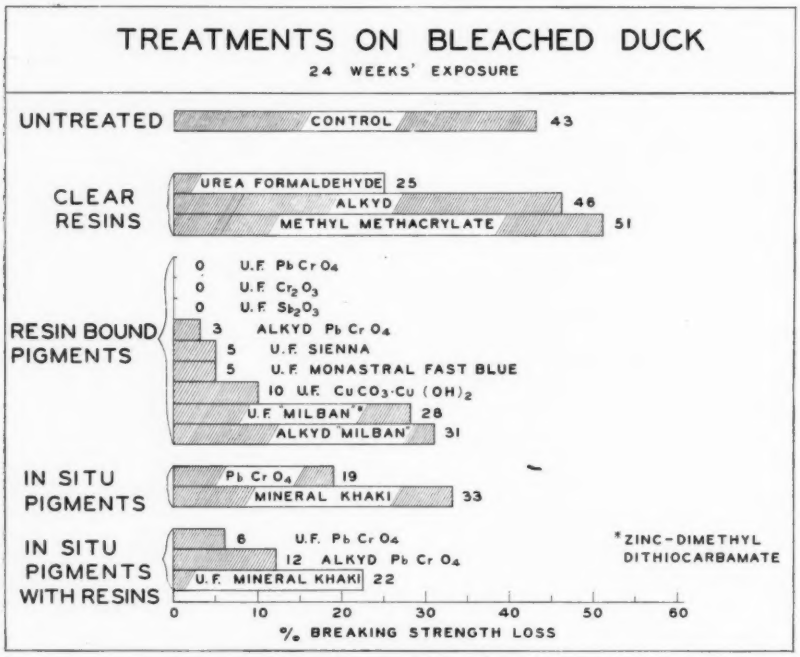


Figure 1—Treatments on Bleached Duck Samples

combination, on bleached duck. Treated with urea-formaldehyde alone, the sample suffered a strength loss of 25 percent after exposure; with lead chromate alone, precipitated *in situ*, it lost 19 percent; with lead chromate *in situ* after-treated with urea-formaldehyde it lost 6 percent; and with lead chromate applied as a pigment bound with urea-formaldehyde resin, the sample suffered no loss at all in breaking strength. The untreated gray and bleached controls lost 42 and 43 percent, respectively, as averages from values obtained from samples at the four stations.

Effect of clear resins. The different clear resins alone applied to the army duck exhibited different effects, with urea-formaldehyde offering considerably more protection against total weathering than the other two. The oil-modified alkyd resin and the methyl methacrylate resin gave practically no protection by themselves. In fact, when these resins were applied to bleached fabric the samples suffered as great or greater loss than the untreated control.

Visual inspection of the samples after exposure revealed that none of the clear resins conferred immunity from microorganisms. (The gray cloth samples only are considered here because it has been demonstrated by many long-term exposures in New Orleans' climate that bleached duck, even untreated, is singularly resistant to spotting by microbiological attack.) Although there was always somewhat less spotting of certain resin-treated samples than of untreated controls, not only did methyl metracrylate resin apparently not inhibit biological growth at all, but appeared actually to enhance biological attack. Gray cloth treated with this compound was even more spotted than the control. Urea-formaldehyde treatment also—surprisingly, in view of the high strength retention of these samples—allowed considerable microbiological attack, although not as much as methyl methacrylate. The alkyd resin-treated samples were invariably clean and free of spotting.

Increasing the amount of resin on the sample resulted in little improvement of weather resistance. A sample of gray duck with 10 percent urea-formaldehyde exposed at New Orleans suffered a 9-percent loss of strength while the simultaneous exposure of a 5-percent urea-formaldehyde sample showed only 14 percent average loss in the other localities and no loss at New Orleans, nor was the sample with 10 percent resin more free of mildew spotting than the one with 5 percent.

The results obtained in tests in which the resin was applied on two different samples of striped awning just as received from the manufacturer, were inconclusive. Both the urea-formaldehyde and the alkyd resin treatments were alternately better and worse than the untreated controls.

Even when the resin appeared to offer some protection to the awning fabric, their effectiveness was not, for instance, as striking as that of urea-formaldehyde on the army duck. Microbiological attack, especially on the tan stripes of the green awning, was more pronounced on the urea-formaldehyde-treated sample than on the control. The alkyd-treated sample was only slightly affected.

In appearance the urea-formaldehyde-treated colored awning material was superior to other treatments and to the controls—after 24 weeks' exposure the colors were noticeably brighter and better preserved than on the other colored samples including that treated with alkyd resin.

The failure of resins to prevent biological attack might possibly be due to some after-treatment on the awning material which was applied by the manufacturer.

Effect of resin-bound pigments. The presence of pigments incorporated with the resin treatments improved the weather resistance. Almost any pigment of those examined appeared to increase the effectiveness of the resins. Lead chromate and chromium oxide, which of themselves have excellent light-screening properties, when incorporated with resins showed the greatest protective effect.

The pigment dyestuff, Monastral Fast Blue, not only protected the sample well but permitted it to retain much of its color and appearance. After exposure the cloth was still clean and unspotted both face and back. While the face had faded

somewhat, it was still a good level color.

Pigments selected for their fungicidal properties are at the bottom of the list (Table II)—a fact which apparently bears out the observation of Barghoorn (*6*) that the more effective fungicides seem to catalyze photochemical degradation.

Effect of in situ pigments. Of the two pigments applied by chemical precipitation in the fabric, the lead chromate proved to be definitely better than mineral khaki. Although the lead chromate was improved by after-treatment with both alkyd and urea-formaldehyde resins, its resistance to weather did not equal that of the lead chromate and urea-formaldehyde combination applied as resin-bound pigment. After-treatment with urea-formaldehyde increased the protective qualities of the mineral khaki and made it about equal to lead chromate used alone.

Effect of purification of fabric before treatment. There were parallel treatments on gray and bleached fabrics only in the first two groups (Table II). All gray samples in the group treated with resin only displayed better resistance to weathering than the bleached. In the resin-bound pigment group, although the difference between gray and bleached samples was small, the bleached were better than the gray. Perhaps, in explanation of the differing behavior of the gray samples in the two groups, it might be suggested that in the clear resin-treated samples, the natural impurities of the gray cloth acted to shield the cellulose, while in the other case those same impurities prevented the intimate contact of pigment and fibers necessary for maximum protection.

Effect of exposure conditions. Table IV presents the results of the exposure of 12 selected treatments at the four exposure stations. The treatments are listed in descending order of effectiveness based on the average values of the percent loss in breaking strength. In this list the averaged values show that urea-formaldehyde treatments are again superior. Only lead chromate *in situ* pigment breaks into the group of urea-formaldehyde treatments. The straight alkyd resin treatment appeared to resist weathering little, if any, better than the untreated controls.

Individual values obtained at each station rated the treatments substantially in the same order as the average values, which indicates that the treatments react in practically the same manner to somewhat different exposure conditions.

It is interesting that the losses for exposures made in Georgia were uniformly high, a result attesting to possible acid conditions to which these samples were subjected. As a consequence, the average values for breaking strength loss were considerably higher than if the results of tests at Louisiana, Alabama, and Texas alone were considered. These high losses do not substantially change the picture, however, and they serve as a valuable index to the behavior of the treatments under severe conditions.

The difference in atmospheric contamination between the industrial and non-industrial locations was demonstrated by the data for the untreated controls, in particular by the fluidity values which constitute a more sensitive test for chemical change in the cellulose than does strength loss. From the relatively high fluidities and the grimy appearance of the samples from the industrial locations, it was inferred that these samples, more than the others, were subject to the chemical action of smoke and fumes.

A further demonstration of the greater subjection of samples in the industrial locations to atmospheric contaminants of an acidic nature is found in a consideration of the pH values of the samples. At all of the four stations, before exposure there were no significant differences between any of the samples, the pH values of which were all within one-half a pH unit of 6.5. In general, the values after were about the same as before exposure. The pH of samples exposed at the two industrial locations, however, was consistently lower, sometimes by a whole unit, than of samples at the other locations.

Effects in cabinet and carbon arc exposures. Exposed to sunlight under the special conditions prevailing inside the solar cabinet, the combined urea-formaldehyde-lead chromate treatments, both as resin bound and *in situ* pigment, showed no loss in strength. The plain urea-formaldehyde on bleached duck suffered less than half the strength loss of the untreated control, and plain methyl methacrylate on bleached duck lost more than the control. All the samples were considerably bleached, gray and bleached samples after exposure being scarcely distinguishable. The lead chromate-treated samples were faded and the urea-formaldehyde-treated *in situ* lead chromate had turned a rather dark brown on the face (as it did to a greater or lesser extent in the exposure outside the cabinet).

Comparison of the deterioration of samples exposed in the carbon arc with those exposed for 24 weeks to actual weather, showed no exact parallel relationship—the order in which the samples were classified by their resistance to arc exposure did not hold, strictly, with weathered samples. However, these samples which failed badly in the arc exposures were also least resistant to weathering. Of the ten samples which endured the best upon arc exposure, eight were among the ten best of the weathered samples. Thus it may be that the carbon arc weathering machine, as modified for these experiments, will prove helpful in rating the ultraviolet-screening properties of experimental fabric finishes.

An interesting and, so far, unexplained incidental observation is that the relative degradation of the gray and bleached controls exposed in the cabinet was just the reverse of that observed for outdoor exposure. Results from many weather exposures made over a long period have shown that untreated bleached cloth invariably deteriorates more than the gray; yet for every test made by exposure to radiation alone, isolated from other factors, as in the solar cabinet and in the carbon arc weathering machine, the gray cloth showed more rapid breakdown, and in some instances strikingly so.

Miscellaneous observations. Considering all the individual samples, there was not a marked difference in their moisture take-up when they were subjected for varying periods of time to air saturated with water vapor. Comparison of the averages for the percent take-up of urea-formaldehyde-treated samples with the averages

Table III
Effect of Clear Resins on Striped Awnings

Treatment	% Breaking Strength Loss	
	Blue	Green
U.F.	11	36
Alkyd	28	25
Control	25	33

Table IV
Results of Weather Exposure for 24 Weeks at Four Locations

TREATMENT		LOUISIANA % B.S.L.	LOUISIANA Fluidity	ALABAMA % B.S.L.	ALABAMA Fluidity	GEORGIA % B.S.L.	GEORGIA Fluidity	TEXAS % B.S.L.	TEXAS Fluidity	4 STATION AVERAGE % B.S.L.
U.F. Sienna	bleached	0		0		21		0		5
U.F. $PbCrO_4$ *in situ*	bleached	0		0		24		0		6
U.F.	gray	0		8		37		10		14
$PbCrO_4$ *in situ*	bleached	10		14		41		11		19
U.F. Mineral Khaki	bleached	20		18		30*		18		22
U.F.	bleached	21		23		53		1*		25
U.F. Milban	bleached	14*		35		54		7*		28
Mineral Khaki	bleached	31		32*		42*		27		33
Untreated Control	gray	38	9.05	35	16.8	61	25.7	32	9.25	42
Alkyd	gray	28*		39		64		37		42
Untreated Control	bleached	41	15.0	40	19.9	66	30.6	24*	11.4	43
Alkyd	bleached	38*		44		70		32*		46

*Not in the order established by the averages.

for all the other treatments (Table V) after 1, 2, and 4 hours in the fog chamber, showed that the former took up less moisture and at a slower rate than the others.

Table V
Moisture Take-up in Fog Chamber

Hours Exposed to Moisture-Saturated Air	% Moisture Take-Up		
	All U.F. Samples Average	All Other Samples Average	Untreated Gray Cloth
1	3.90	4.06	2.89
2	4.85	5.50	5.62
4	6.20	7.08	8.53

Table VI
Effects of Leaching During Exposure

Treatment	% Lead Content	
	Before Exposure	24 Weeks' Exposure
$PbCrO_4$ *in situ*	0.83	0.62
$PbCrO_4$ *in situ* Alkyd	0.83	0.65
$PbCrO_4$ *in situ* U.F.	0.87	0.74

The pigment-binding efficiency of the resins was demonstrated by an analysis of the metal content of resin-bound pigment samples before and after exposure, as given in Table VI.

Summary

Data are presented which show that, among various experimental resin finishes investigated, urea-formaldehyde used alone has definite weather protective properties for cotton and is even more effective when combined with pigments. Certain pigments applied *in situ* and pigments bound with oil-modified alkyd resin also effected a high degree of weather resistance.

Treatments on the samples exposed in the normal incidence cabinet to sunlight while isolated from other factors of weather were rated in the same order of effectiveness as by outdoor exposure. The only anomalous result was that for the gray control which, under artificial conditions, was degraded more than the bleached control, which is contrary to experience with outdoor exposures.

A comparison of the results of outdoor exposures with those of carbon arc exposures did not reveal a definite correlation, but indicated that the weathering machine can aid in classifying the ultraviolet light-screening properties of experimental treatments.

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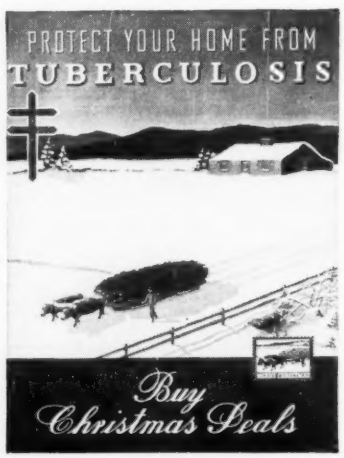
All correspondence regarding the Employment Register should be sent to the National Secretary



Secretaries of Local Sections should send all reports and technical papers directly to the National Secretary

EMPLOYMENT REGISTER

This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.

47-36

Education: University graduate.

Experience: Consumer relations and textile laboratory management.

Age, 37; single; references; will consider any location.

47-38

Education: S.B., Lowell Textile Institute, 1947.

Experience: Laboratory asst. and kettle hand.

Age, 22; single; references.

47-39

Education: B.T.C., Lowell Textile Institute, 1936.

Experience: Textile chemist, operator of dyeing and finishing equipment, laboratory manager and inspector, manager of dyeing plant.

Age, 35; married; references.

CALENDAR

PHILADELPHIA SECTION
Meetings: January 9, 1948, February 27, April 9, May 14 (Kugler's, Philadelphia).

NEW YORK SECTION
Meeting: December 5 (Swiss Chalet, Rochelle Park, N. J.); January 23, 1948 and March 12 (Hotel New Yorker, N. Y.).

SOUTHEASTERN SECTION
Meeting: December 6 (Atlanta, Ga.).

SOUTH CENTRAL SECTION
Meeting, December 13 (Hotel Patten, Chattanooga). Speaker: Dr. Raymond B. Seymour "Effect of Urea on Cellulosic Textiles."

NEW PRODUCTS

(Continued from Page 694)

Textile Chemicals

(Continued)

Protolene D

(Dexter)

A sulfated organic condensation product. Said to have extremely high wetting properties without foam formation. It is recommended by the manufacturers for package dyeing of cottons and rayons, and for all processes where quick wetting out is essential. This product is also recommended for rewetting problems, since small amounts left in cottons or rayons will give a quick rewet of the goods. May be used as a Sanforizing oil.

Quaker Dianol N

(Quaker)

A synthetic detergent of the sulfated fatty amide type. In appearance an amber colored heavy liquid. It is neutral in a 1% solution. It is said to have excellent sudsing properties. It is stated that it is a powerful cleaning agent for all fibers. It is said to be stable in normal dyehouse conditions of acid, alkali, and hard water. It is particularly recommended by the manufacturers for work where the pH of the bath must remain neutral.

Quaker Diaperm S-11

(Quaker)

An improved cation active softener manufactured as a firm tannish paste that is readily dispersible in water. It is said to minimize yellowing of whites or possible changing of dye index.

Quaker Polymene D-37

(Quaker)

A non-ionic synthetic ester type detergent manufactured as a light amber liquid. It has a pH between 6.5 and 7.5. It is said to be stable in normal dyehouse concentrations of acid, alkali, and hard water. It has low foaming action and is recommended by the manufacturers for use in operations where excessive foaming is objectionable. It is anhydrous and contains no builders.

Quaker Polymene E-89

(Quaker)

A non-ionic wetting agent that is a light amber liquid in appearance. Its pH is between 6.5 and 7.5. It is said to have a powerful wetting action. It has relatively little sudsing or foaming action and is useful in processes where good wetting under violent agitation with a minimum of foaming is desired. It is an anhydrous ester-ether type material containing no builders.

Quaker Pro-So-Tex 61

(Quaker)

A one piece semi-durable wax emulsion type water repellent for all fabrics and fibers. Initial spray rating of 100. After applying and drying this product in the manner in which a wax emulsion water repellent is normally handled, it is said to be possible to obtain spray ratings of at least 70 after 3 washings or 3 dry cleanings. Curing temperatures are not necessary, but fabrics should be thoroughly dried after application.

Quaker Velvetol AT-11

(Quaker)

A synthetic fatty condensate softener manufactured as a heavy amber colored liquid. It makes transparent solutions with water. It is said to remove harshness and brittleness when applied on textile fabrics. When diluted with water down to 1 or 2% concentrations it is said to make solutions which are considerably more viscous than is true of other products in the softener class. It is stated that it produces more surface effect than is usually obtained with softeners. If the fabrics are steamed after finishing, considerable plumpness is obtained.

Rayon Finish

(Publicker)

This new resin finish is said by the manufacturer to increase greatly the value of low sley continuous filament rayon fabrics, by improving the dimensional stability as well as imparting a crisp pleasant hand. The finished rayon may be washed many times in alkaline soap solution without removing the finish or injuring the cloth. It is said that the finish requires no special equipment for application and, therefore, may be applied by all finishing plants. It is said that improved stability of the finished fabric may be obtained by applying rayon finish prior to any dyeing, scouring, or printing operations. The application of the finish to the grey goods insures against damage by slippage during subsequent processing.

Renose S

(Ciba)

A cellulose derivative for use as a warp and hank sizing agent.

Renose V

(Ciba)

A cellulose derivative for use as a synthetic thickening agent. It is recommended by the manufacturers for use in printing direct, Chlorantine Fast, and acid colors on cotton, viscose rayon, silk and wool; vat colors in machine, block, screen and spray printing styles; Cibacete colors on acetate rayon and nylon; Cibagenes and diazotized bases; white and colored discharges and resists. It may also be used as a thickener for padding liquors provided they do not contain tannin or aluminum salts.

Resonet 1267

(Houghton)

A resin emulsion for producing non-starch finishes, particularly on cotton goods.

Retardine* D

(Standard Chemical)

Said to be an outstanding retarding and leveling agent for vat colors. It is especially designed for use with fast exhausting colors, but may be used with colors of average exhaustion characteristics. It is stated that its use has enabled dyers to obtain level and consistent shades of pastel colors heretofore unobtainable. It is said to provide insurance against uneven dyeing.

* Registered Trade Mark

Rhoplex FRN

(Rohm & Haas)

Rhoplex FRN is a recent addition to a versatile series of aqueous dispersions of acrylic resins for textile finishing. Rhoplex FRN is said to be the first dispersion of an acrylic resin to be supplied in the non-ionic form. It is compatible with a wide range of acids, bases, and electrolytes, cationic softeners, urea and melamine formaldehyde resins, and durable and non durable water repellents, as well as the regularly supplied anionic finishing materials. It is stated that this product is completely polymerized during manufacture and requires only the normal drying process to set the resin on the fiber. Rhoplex FRN is particularly recommended by the manufacturers for use with water repellents, where it is said to increase the resistance of the treated fabric to the impact penetration of water, and with urea and melamine formaldehyde resins to modify the handle of the fabric.

Rhoplex WN-75

(Rohm & Haas)

Rhoplex WN-75 is a non-ionic aqueous dispersion of an acrylic resin designed specifically to impart a durable, crisp, finish to textile fabrics. Being non-ionic, Rhoplex WN-75 is compatible with acids, bases and salts, as well as with cationic softeners and urea and melamine formaldehyde resins. It is stated that Rhoplex WN-75 requires no curing since the resin is fully polymerized during manufacture and normal drying will set the resin on the fiber. Rhoplex WN-75 is recommended by the manufacturers for use in textile finishing where a crisp, starch-like finish with excellent durability is desired.

Rug Cleaner Base

(Publicker)

A new detergent compound is presented which has been designed especially for use in preparing rug cleaners for location cleaning. It is said to have the particular advantage of imparting to the rug cleaner the properties of very slowly wetting through to the back of the rug, but very rapidly spreading and wetting of the surface pile in a horizontal direction. This important property results in faster drying and in addition, effects a saving in cleaning because less cleaner is required for area of rug treated. It is also said to leave the rug soft and vibrant.

Sanforol #105

(Standard Chemical)

A one product Sanforizing assistant said to possess good wetting, rewetting, softening, and lubricating properties.

Sapamine WL

(Ciba)

A cation active softening agent said to possess the following advantages:

No shade change.

No or very slight effect on light fastness.

No yellowing of white goods.

A fuller and rounder hand than quaternary softeners.

Scourlene D Powder

(Hart)

A new type synthetic detergent for general use on all types of fabrics, especially woolens. Scourlene D Powder is unique in being a non-ionic detergent powder. It is offered as a non-sneeze powder, stable on storage, and readily soluble in warm water. This product is compatible with alkalies such as phosphates, silicates, carbonates, etc. and with soap for use in all scouring operations. Scourlene D Powder is recommended by the manufacturers as a kier boiling agent, for scouring cotton raw stock, and as a scouring and dyeing agent for rayon, cotton and particularly wool.

Seriken 1320 N

(Hart)

A scrooping agent in the form of a white creamy liquid emulsion. It is readily soluble in water at any temperature and is said to impart a silk-like, very crunchy scroop to all types of cotton and rayon fabrics. Seriken 1320 N is readily applied by simply running the goods in a solution of the material, squeezing out the excess liquor and drying. The product is compatible with water repellents such as the wax-aluminum type but should not be used with soaps, sulfonated oils and cationics.

Softener FG

(Synthetic)

A durable type softener said to possess a high degree of compatibility imparting a superior soft, smooth, supple hand. It is stated that its unique and important characteristics are resistance to hot iron scorching, will not discolor white goods, and does not produce odors. It is said to possess wetting ability, good dispersions and stable suspensions. It combines readily with synthetic resins and starches. It is said to have resistance to repeated launderings and dry cleanings. It is stated that it is excellent for rayon yarns, fabrics and piece goods.

Soluble Oil CQN

(Burkart-Schier)

A trough lubricant for knitting nylon. It is said to form exceptionally stable emulsions and inhibit corrosion. It assists in knitting and subsequent handling.

Standafin R-10

(Standard Chemical)

A stable modified vinyl resin emulsion, said to impart a firm durable finish. It is stated that it is used successfully for snag resistance on hosiery and as a non-slip finish on piece goods.

Stantex* #227

(Standard Chemical)

A liquid blend of synthetic organic compounds, easily soluble at all temperatures and said to produce a persistent suds and to not be affected by acids, alkalies, and water hardness. Said to be successfully used as a scouring and wetting assistant on wool, rayon and cotton, and an outstanding fulling agent, it may be used alone or with soap, with and without alkali. It is said to promote quick rinsing, leaves no gummy handle, and produces brighter shades in dyeing.

* Registered Trade Mark

Streptomycin Sulfate

(Heyden)

An antibiotic recovered as the sulfate salt from the fermentation of the organ-

ism, *Actinomyses Grisseus*. Sterile, non-toxic, non pyrogenic and free from Vaso-constrictor substances. Stability: Storage at room temperature did not show excessive loss of potency in 1 year. Available in vials containing the equivalent of 1 gram of pure streptomycin base. Uses: Effective against many gram negative organisms. Useful in Chemotherapeutic and Veterinary medicine.

Strodex 50

(Dexter)

A synthetic scouring, emulsifying and wetting out agent in liquid form. It consists of synthetic detergents of the sulfated amide condensation type. It is said to be resistant to hard water, acid, alkalies, and to be readily soluble in cold or hot water. It may be used on delicate shades where alkaline conditions must be avoided. It is stable in solutions of peroxide and bichromate.

Sulfanole KB

(Warwick)

Said to be a highly effective detergent and wetting agent of the alkyl aryl sulfonate type. It is supplied in the form of a light colored, free-flowing powder.

Surface Active Agent HHS

(Publicker)

To help fill the need for a low priced all around product, Surface Active Agent HHS is presented. It is said to be sufficiently versatile to be of great value in most wet processing operations where a surface active agent is used, and is especially recommended by the manufacturer for wetting, spreading, dispersing, and deflocculating. It is essentially neutral but loses none of its effectiveness even in relatively strong acids or alkaline solutions. Surface Active Agent HHS is an alkyl aryl sulfonate supplied in flake form.

Surfax 1266

(Houghton)

A surface active agent said to have excellent wetting out and particularly good wetting back properties.

Syntergen MV

(Hart)

Said to be a highy active synthetic detergent composed of a modified alcohol sulfate and complex calgonaceous phosphates. Syntergen MV is soluble in warm water yielding a clear very sudsy solution. The product is said to be stable on storage and in acid or alkaline solutions.

It is stated that Syntergen MV has found wide application for use in soaping prints, scouring all types of textiles, in improving the brightness of shade, eliminating scum formation, and as a high sudsing agent. Syntergen MV is said to combine superior activity with very low cost of application.

"Tergitol"* Wetting Agent P-28

(Carbide & Carbon)

Sodium di(2-ethylhexyl) phosphate, 24 to 26 per cent by weight. An economical surface-active compound designed to function primarily in water solutions containing a concentration of from 1 to 5 per cent of alkalis or neutral salts. Unstable in acid solutions. Particularly recommended by the manufacturers in kier-boiling of cotton and in textile dyeing operations.

* Registered Trade Mark

Textile Finishing Oil #1416

(Commonwealth)

A complex amino salt. It is said to be a good substitute for castor oil in all its applications.

Thickeners

(Publicker)

An interesting series of thickeners is presented which are said to cover the viscosity range from 5 to 32,000 cp for one percent solution. These thickeners are made from a series of new resins prepared from domestic raw materials. It is said that the thickeners are compatible with natural gum solutions, glycols and alcohols, soap and synthetic detergents. They are extremely effective thickening and gelling agents and are recommended by the manufacturer for a wide variety of uses including thickening of printing pastes, drilling muds, and toilet preparations. In addition to thickening, these materials have been found to be excellent emulsifying agents, either alone or with a combination of standard soap-like emulsifiers.

Trenamine D-100

(Alco)

An alkylolamide of long chain fatty acids, supplied in completely anhydrous liquid form. It is said to be a highly efficient detergent, active in low concentrations in hard and soft water. Better whites from scoured prints and better bottoms for bleaching and dyeing are said to result from its markedly effective action in preventing deposition of suspended solid matter on the fabrics.

Trenamine W-50

(Alco)

Primarily an anionic wetting agent but also possesses considerable detergent activity. Minimum foaming in either soft or hard water. Non-exhausting and exhibiting moderate wetting back properties.

Trisconize

(Scholler)

A chlorination method of treating wool and wool mixtures to impart shrinkage control. Trisconize "A" and "B," buffering agents, are said to prevent the over- and under-chlorination of the fiber. It is stated that treated fabrics retain their natural feel and will withstand innumerable launderings without shrinking. The process can be applied either before or after dyeing on raw stock, tops, yarns or fabrics.

Triton C-50

(Rohm & Haas)

Triton C-50 is a new non-ionic surface active agent which is recommended by the manufacturers for use in all phases of textile processing where powerful detergency is desired. Effective in very low concentrations, Triton C-50 is said to be particularly outstanding in its ability to remove solid soil and suspend the soil so that it does not redeposit on the fabric being processed. Triton C-50 is non-ionic and is unaffected by normally used concentrations of acids, alkalies, electrolytes, and hard water. It is said to be instantly soluble in hot or cold water, and to be extremely free-rinsing. Triton C-50 is recommended by the manufacturers for scouring raw stock, yarn, and piece goods in the grey, and for after-soaping naphthol and vat dyed and printed fabrics as well as raw stock and yarn.

Twitchell Oil 476
Twitchell Oil 507

(Emery)

Two new oils for cotton finishing, both

regular and Sanforized fabrics, Twitchell Oil 507, intermediate between Twitchell Oil 3x and 476, is said to impart slightly faster rewet speeds and provide a medium soft hand. Twitchell Oil 476, an all fatty-base oil, is said to impart highest speed of wet-back, and a very soft hand, softer than most assistants such as sulfonated fatty oils or esters. Each of these oils can be used along with other finishing agents to produce intermediate effects to cover the wide range of finishing operations. Selection depends upon conditions of use, the finish desired and the economy of processing. All three oils are compatible in all proportions with starch, dextrin, Glauber's salt, talc, glycerine, tallow, sulfonated tallow, sulfonated vegetable oils, stearic acid softeners and all other common softening agents except the true cationic types. Oils 476 and 507 are also compatible with Epsom salts.

Unitone XV
(Scholler)

A penetrant, levelling agent and retardant which is said to make it possible to obtain good unions in fabrics containing mono- and multi-filament nylon yarn.

Uvitex RS
(Ciba)

A whiting agent suitable for cotton and viscose rayon fabrics. This product is a water soluble, strongly bluish, fluorescent preparation said to possess great substantivity and to be excellently adapted to the aftertreatment of white laundry as an addition to the last rinse bath.

Velvaset
(Stein, Hall)

A water dispersion of synthetic resins recommended by the manufacturers as a backsizing finish, permanent to laundry and dry cleaning, for pile fabrics, particularly those fabrics used for upholstering. The finish is claimed to impart resistance to wrinkling, to give a fuller hand, and also to assist in anchoring the pile. It does not require vulcanization or high heat and the finish is said to be free from odor and discoloration.

Vinyl Inks
(Stein, Hall)

A new line of vinyl inks said to give excellent results in the printing of vinyl sheets. A fairly complete color range is available and the manufacturer states that vinyl thinners and vinyl clears are included in this new line. The thinners are used to adjust the viscosity of the ink, while the clears are used to reduce the intensity of the color to the desired depth.

Vulcanol "A"
(Alco)

A GR-S latex compound having the proper viscosity for direct coating or backsizing applications without modifications or additions by the ultimate consumer. It is said to be characterized by rapid vulcanization and excellent ageing properties. Developed primarily for furniture pile fabric and automotive upholstery.

Vulcanol "L"
(Alco)

A fully compounded GR-S latex, 37.5%-38.5% solids, 34%-35% actual rubber, said to produce excellent plasticizing and adhesive properties in starch sizing mixes. Developed primarily for starch-rubber Axminster sizes and backfilling mixes.

Vulcanol Adhesives
(Alco)

A line of aqueous adhesives, manufactured by blending natural and synthetic latices and modifying with resins. Said to be particularly successful in automatic paper container manufacturing. Characterized by rapid initial tack and tack retention on ageing. Of interest in textile adhesive applications.

Warco A-97
(Warwick)

An emulsifying agent for preparing dispersions of mineral waxes.

Warco A-162
(Warwick)

A non-ionic surface active agent for use as a detergent, penetrant or dispersing agent.

Warcotex A-120
(Warwick)

A water-dispersible substantive softener for finishing of all types of cellulosic fabrics. It is said to be extremely resistant to oxidation on the fabric.

Warcotex BM
(Warwick)

A highly concentrated water-dispersible synthetic wax for sizing of spun rayon warps.

Warcowaxes
(Warwick)

A series of amide type waxes characterized by high melting point and hardness. The melting points of these waxes are claimed to be higher than any known natural wax and the hardness values are said to run higher than for Carnauba wax.

X-325
(Burkart-Schier)

A synthetic spotting agent having wide application. It is generally employed for pre-spotting before dyeing.

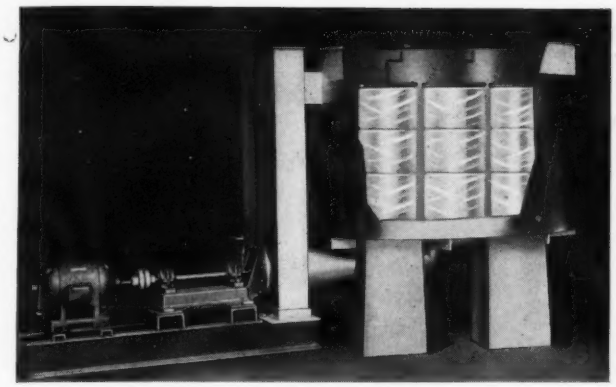
Zipolite
(Royce)

An alkyl-aryl sulfonate said to show quick wetting; 0.2% solution gives Draves test of 8-9 seconds. It is said to retain its good wetting properties at all temperatures from cold to boiling. It is further said to have considerable detergent value. It is stated that it possesses good dispersing and emulsifying power, withstands hard water and electrolytes, and works equally well in acid and alkaline liquors. It is used as a kier assistant, dyeing assistant and for all general wetting purposes.

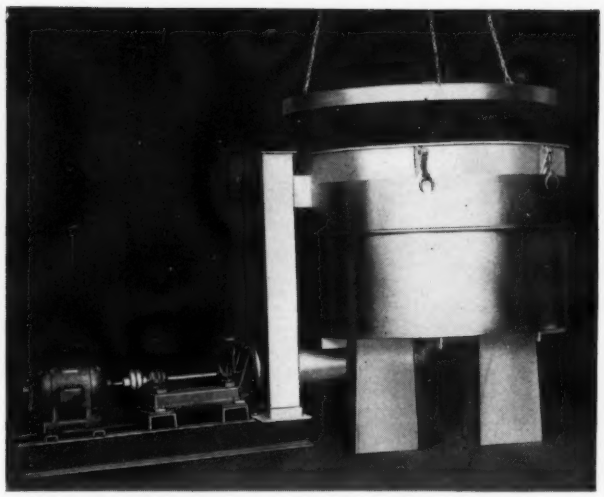
Equipment

Roller Dryer for Continuous Pad Dye Range
(Proctor & Schwartz)

In processing goods with certain types of dyes in a continuous pad dye range, it is strongly recommended that the material be dried after the pad dye operation. It is stated that the Proctor Roller Dryer, while not actually a new machine, has been found to be extremely well adapted to this application. Its use in this application during the past year is said to mark a decided development in



Model RAPR Worsted Top Dyeing Machine



Model NUAPR Wool Raw Stock Dyeing Machine

this type of processing. The dryer operates in range with the padder, discharging goods containing from 15% to 25% moisture, which is the correct amount for further processing.

Top Dyeing Machine

(Standard Fabricators)

The model RAPR worsted top dyeing machine is of all stainless steel construction, especially designed for dyeing worsted tops by the spindle system. This machine processes tops of different dimensions or uniform dimensions at the same time, giving thorough penetration in either case.

Raw Stock Dyeing Machine

(Standard Fabricators)

This new model NUAPR wool raw stock dyeing machine prevents felting, channelling, or fiber disturbance. The steam intake is located in the dyestuff feeding tank, which is separate from the dye tank. The dyestuff is first distributed by a propeller before reaching the material, giving a steady flow of liquor at low pressure even at the boiling point.

Vacuum Extracting Box

(Birch)

A patent adjustable jaw vacuum extracting box with automatic ring type slot seals for application to continuous dyeing machines, water mangles and dry cans. This vacuum box is made to handle one, two or three strands as the particular application may require. It is used for such applications as indicated above and is said to be decreasing the amount of moisture remaining in cotton fabrics so that a substantial saving in steam is made and permits increased drying speeds up to 100%.

Continuous Open Width Machine

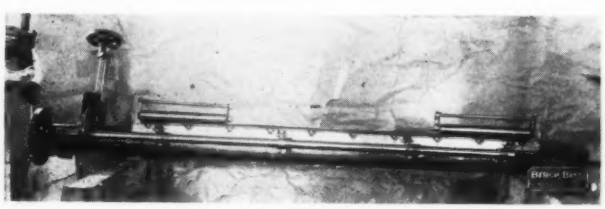
(Birch)

A seven tank continuous open width machine for processing fabrics with uniform tension and selected speeds. The machine may be used for scouring, crabbing, dyeing, soaping, rinsing, etc. The tanks are preferably of stainless steel but may be of other metal or cypress. Each tank is fitted with immersion rolls, steam pipes, cross spray and overflow, and temperature controls. The squeeze rolls are rubber covered, but may be of other material, and run in self aligning ball bearings. The pressure is applied pneumatically or hydraulically as may be preferred. The pressure is uniform on both ends of the rolls and may be applied to all rolls simultaneously. The drive is by so-called "soft motors," said to give uniform tension on the fabric throughout without the use of dancer rolls. The speed may be varied at will. The entering end is fitted with a cloth guider and the delivery end with a folder.

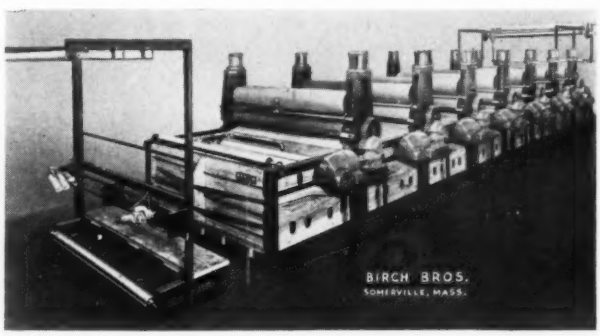
Enclosed Dyebox

(Blickman)

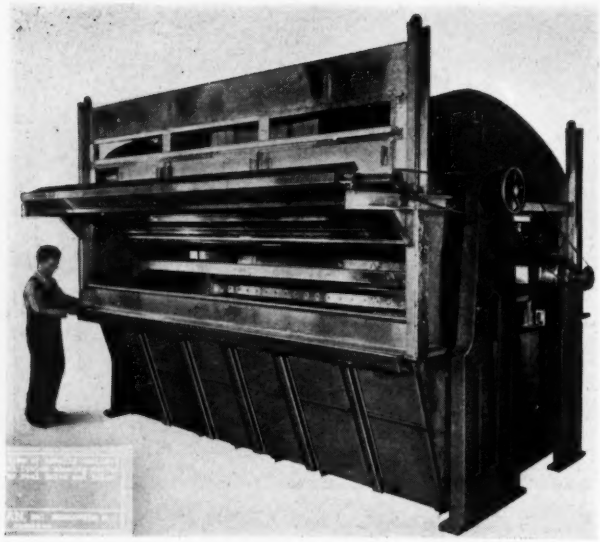
The new Blickman fully enclosed dyebox has been designed to increase productivity in the dye-house. It is said to speed up the dyeing cycle by reducing the time



Birch Patent Adjustable Jaw Vacuum Extracting Box with Automatic Ring Type Slot Seals.



Birch Continuous Open-Width Machine.



Blickman Fully Enclosed Stainless Steel Dyebox

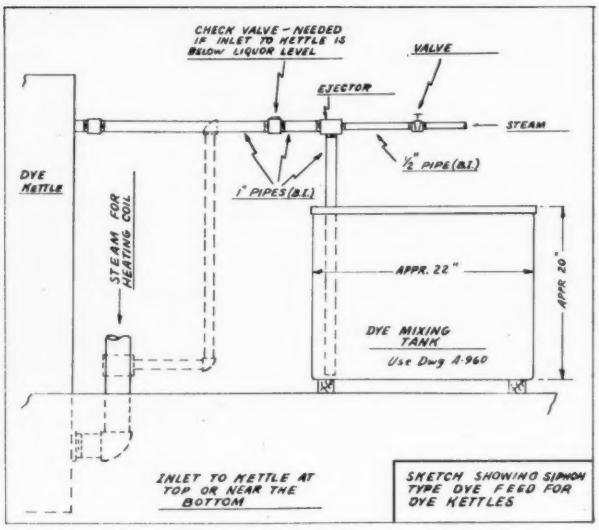


Diagram of Steam Injection Method of Introducing Dyes to Dye Kettles.

required for loading, heating, lacing, unloading and changeover. Just a quick rinse is required to clean the box to prepare it for the next run.

Counter-balanced doors at the front and back permit effortless operating and make the reels as accessible as in an open box. Glass windows on all four sides permit visual inspection during the entire run. Small patch doors permit sampling of any rope in just a few seconds.

It is stated that, since the box is fully enclosed, the dyeing operation is more easily controlled, eliminates spotting and produced high quality work. Dyehouse fog is said to be eliminated and plant maintenance reduced. Appreciable savings are said to be effected on fuel, water and dyestuff.

Steam Injection Method of Introducing Dyes to Dye Kettle

(Riggs & Lombard)

The steam injection method of introducing dyes into dye kettles is said to assure even distribution and therefore more even dyeing. The system consists in part of a steam pressure line leading to a perforated pipe extending into and across the false front on piece dye kettles, and into the expansion tank on stock dye kettles. This steam line forms the top of a T, the bottom of which leads into the dye mixing barrel. A partial vacuum is created by insertion of a Venturi tube into the steam line at the joint of the T, sucking the dye liquor out of the barrel into the line. Thence, the liquor passes directly through the steam line and the perforated pipe into the kettle. It is stated that it is a simple matter to get absolutely even distribution of the dye liquor in the kettle and to accurately control the amount of injection merely by turning a valve in the line to regulate the flow of steam. Risk of serious burns to the operator is also said to be greatly reduced.

As shown in the diagram, this system calls for one dye liquor container for each dye kettle or for every two kettles, but there is no reason why the liquor cannot be distributed by one of several means to each dye kettle through a pipe line from one master container in the mixing room and then sucked into the kettles by the steam injection method.

Stiffness Tester

(Gurley)

This is a new motor-driven stiffness tester designed for rapid, consistent and accurate tests on textiles. The tester is said to measure the stiffness, or absence of it, of practically any thin flexible material, and it can also be used for testing coated fabrics.

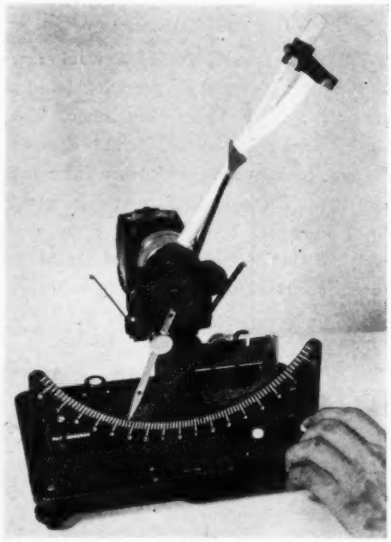
The Gurley stiffness tester has a balance pointer which pivots in jewel bearings, and moves parallel to a sine scale mounted on the base. It is loaded below the center with weights of 5, 25, 50 or 200 grams, fastened 1, 2, or 4 inches from the pivots. The arm carrying the sample being tested is moved by a small-geared synchronous motor which is controlled by a reversing switch on the base.

Bulletin No. 1440, containing complete details of the new motor-operated stiffness tester, is available upon request to the manufacturers. A bulletin is also available which describes the Densometer and Permeometer.

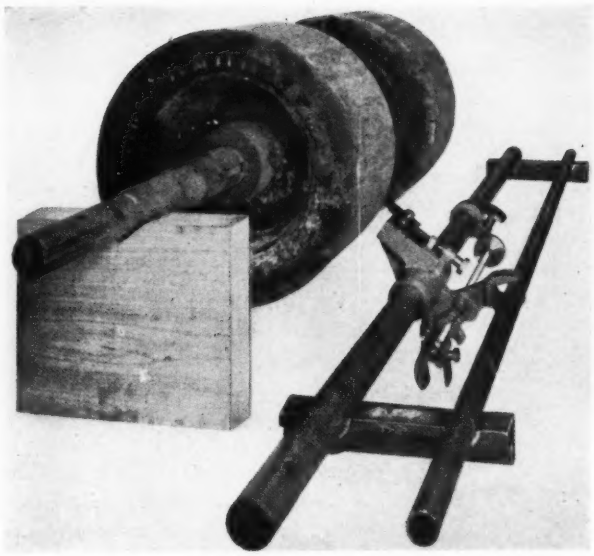
Roll Turning Device

(Riggs & Lombard)

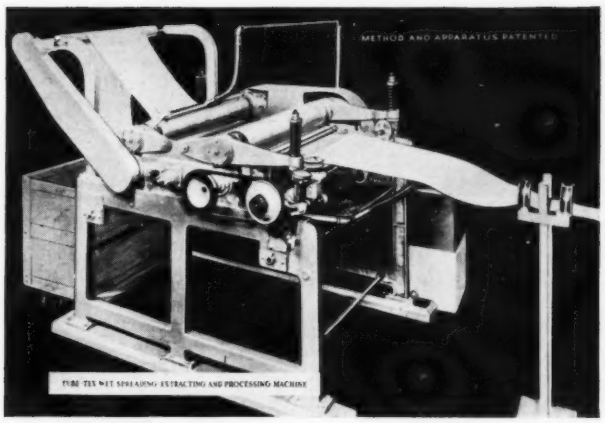
The Fleet Line Roll Turning Device refaces the rolls in a fulling mill without removing them from the machine and without any special equipment other than the simple sliding cross head and tool shown in the illustration. When rolls become hollow in the center, so that the shoulders are touching and the goods begin to slip, it is only necessary to lay up the fulling mill for a few hours to true up the rolls. The time and expense of complete removal is eliminated.



Motor Drive Stiffness Tester



The Fleet Line Roll Turning Device



Tube-Tex Wet Spreading, Extracting and Folding Machine.

The inside lining of the mill is fitted with some special castings which hold the two tubes shown in the illustration. On the larger of these tubes the cross head slides back and forth. The cutting tool is shown with a screw for feeding the depths of the cuts, and another screw for the cross-wise feed. Both are operated by hand. After the device is in position, the power is turned on the mill and the rolls are then trued up and turned down exactly as they would be if they were slung in a lathe in the machine shop.

Since the top roll operates in the opposite direction to the bottom roll, suitable brackets are provided so that the cutting tool is reversed in its position 180°, performing a similar operation on both top rolls after the lower rolls have been turned.

After all four rolls have been trued and turned to the same diameter, it is only necessary to remove the tubes and cross head mounted on them from the mill, readjust the clearance between top and bottom rolls and the mill is ready to produce again.

Safety Sampling Cover

(Riggs & Lombard)

The safety sampling cover is a new feature of the Fleet Line Stock Dyeing Machine. This cannot be opened while the machine is in operation. A rubber diaphragm under the cover pushes up a plunger when the dyeing machine is in use. The plunger raises a stop bar to engage a slotted disc in the handwheel shaft, thus locking the cover opening wheel. (See drawing.) This device is standard equipment on all new stock dye kettles, and may be added to machines now in place.

"Tube-Tex"* High Speed, 2 String Wet Spreading, Extracting and Folding Machine

(Tubular)

A new machine to handle all types of circular knit goods which takes the soaking wet goods from kier, tub or washer and in one operation at speeds up to 70 ypm wet spreads, extracts and flat folds 2 strands of fabric free of lengthwise tension. This machine handles all weight fabrics from light swiss ribs to heavy jerseys. Extraction is said to be uniform, moisture content averages 65%, and cloth leaving this machine is in ideal condition to be fed to loop dryers free of wrinkles and folds and requires no other spreading equipment or operation. It is

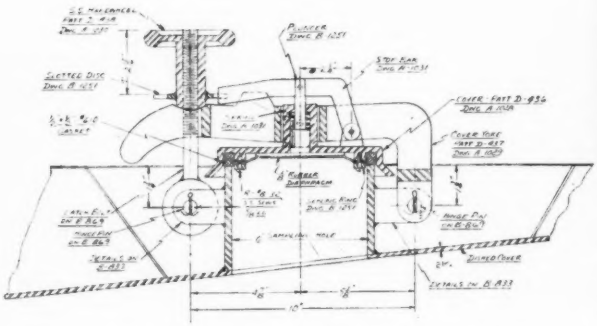


Diagram of Riggs and Lombard Safety Sampling Cover.

Riggs and Lombard Safety Sampling Cover.

stated that the machine is handled by one operator and helps establish uniform widths.

Licensed agents and manufacturers are H. W. Butterworth & Sons Co. of Philadelphia, Pa.

* Registered Trade Mark

Ceiling Type Cloth Perch

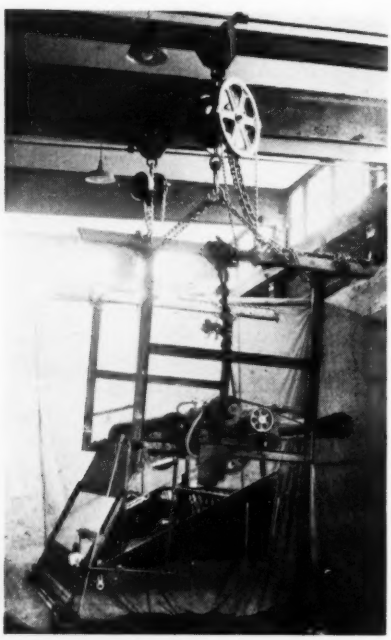
(Birch)

This machine was recently developed to combine the simplicity of the previous simplified type perch and some of the desirable features of the heavy duty perch, the particular features being the sand drum and the spiral opening roll. The sand roll pulls the cloth and delivers it to the inspection board without tension. The machine has forward, reverse and variable speed, through lighting panel, yardage counter and width gauge.

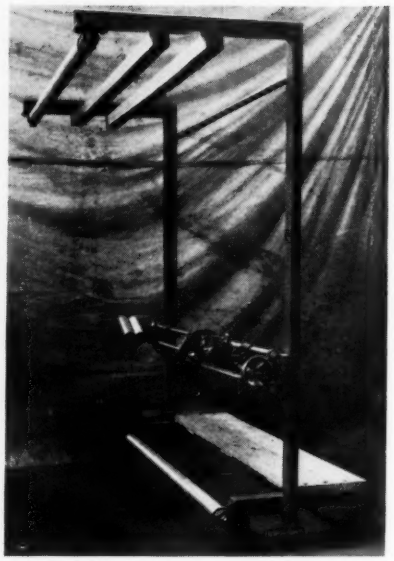
Cloth Tension Rail Unit with Cloth Guiders

(Birch)

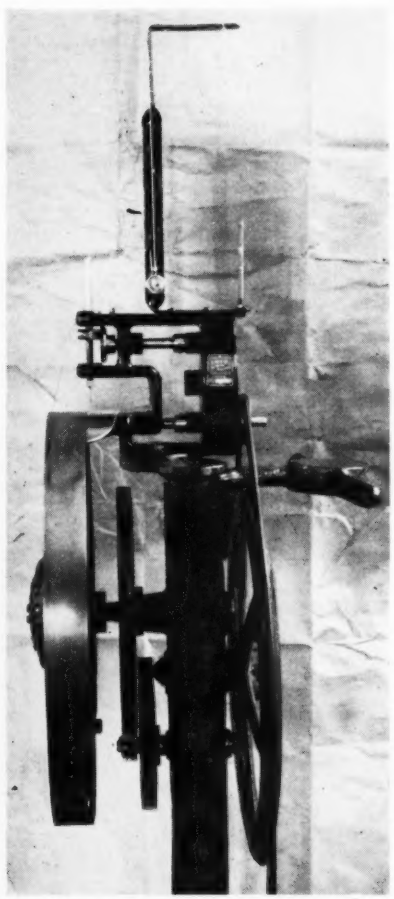
For use before any machines where the cloth is run in the open width, such machines being singers, continuous dyeing machines, continuous crabbing machines, open soapers, etc.



Birch Ceiling Type Cloth Perch



Birch Cloth Tension Rail Unit with Cloth Guiders.



Birch "Excel" Sewing Machine.

"Excel" Sewing Machine

(Birch)

This is a newly designed revolving looper chain stitch geared head type of sewing machine. All gears are cut and a particular feature is that the operator is given more room for threading up the needle.

Votator* Starch Processing Apparatus (Pat.)

(Girdler)

Votator starch processing apparatus is said to offer numerous unique advantages in the production of vat paste and vat reduction paste. Cooking and cooling are accomplished in one-thirtieth of the time required by open kettle methods, as the material flows through the Votator heat transfer tubes on a continuous basis, under closed, controlled conditions. The Votator operation incorporates scientifically determined agitation which uniformly affects all of the material. The paste is said to always be of uniformly high quality, and production cost unusually low. Votator starch processing apparatus is said to meet or exceed the open kettle volume in half the floor space required by open kettle equipment. It eliminates spillage and spoilage and removes the hazard of slippery floors.

* Trademark Registered U. S. Pat. Off.

Ceiling Type Folder

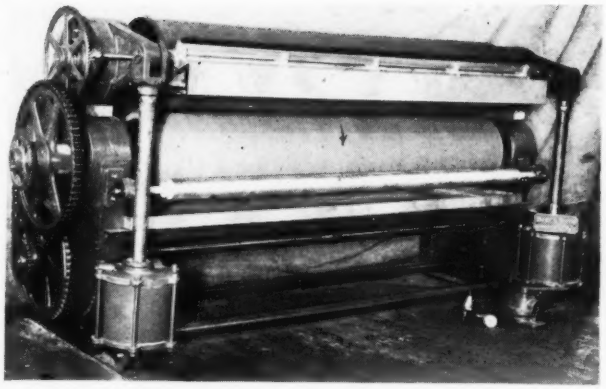
(Birch)

A two roll ceiling type folder with box type plaiter. This adds another style of folder to the three types previously made.

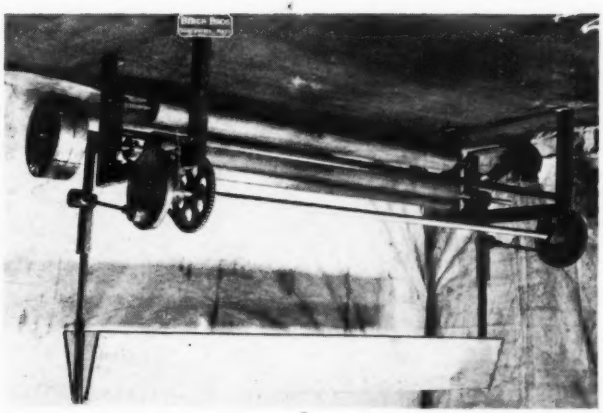
Squeeze Roll Unit

(Birch)

A new roller bearing heavy extracting squeeze roll unit. This machine is built in all widths with rubber covered rolls and the shafts are extra large. The machine is regularly furnished with flock brush, stainless steel flock tray, and pan under the squeeze rolls and is equipped with either constant speed or variable speed drive. The pressure may be applied to 30,000 lbs. either pneumatically or hydraulically.



Birch Roller Bearing Heavy Extracting Squeeze Roll Unit.



Birch Two Roll Ceiling Type Folder with Box Type Plaiter.

ABSTRACTS
FROM CONTEMPORARY JOURNALS

An Absorption Isotherm for Direct Dyes

J. Crank, Journal of the Society of Dyers and Colourists, page 293, Vol. 63, No. 9, September, 1947.

This paper is summarized as follows: A new theory of direct dyeing is presented in terms of the Langmuir theory of surface adsorption, modified to allow for the effect of foreign electrolyte in the dyebath. A simple formula is derived, relating the equilibrium absorption of dye to the dyebath concentration, the concentration of foreign electrolyte in the dyebath and temperature. The formula is shown to account satisfactorily for the main features of the equilibrium dyeing of cellulose by Chrysophenine G in the presence of sodium chloride. The theory is used to calculate the energy of dyeing of cellulose by Chrysophenine G.

New Emulsions Developed for Textile Printing

Textile World, page 143, Vol. 97, No. 9, September, 1947.

New emulsions of the water-in-oil type, the inner phase of which comprises the water-soluble textile coloring compound, have recently been developed for the printing of such dyes as the azoic, chrome and direct colors. A number of advantages of the use of these emulsions are cited. Three components are needed to prepare the emulsion: concentrated clear of the same type as that used for making pigmented emulsions; organic solvents of the same type as that used for making pigmented emulsions; aqueous solution of an azoic, chrome or other class of dye. The printing operation is carried out in the usual manner on a roller printing machine or on screen printing equipment. Somewhat shallower engravings than usual may be employed. After printing, the fabric is dried and acid aged. Soaping is unnecessary. A number of typical formulas, using various classes of dyestuffs, are given.

A New Theory of Non-Linear Viscose Elasticity

Harris Burte and George Halsey, Textile Research Journal, page 465, Vol. XVII, No. 9, September, 1947.

The authors' abstract is as follows:

The stress-strain curve of a material is calculated on the hypothesis that when flow occurs a section of the molecular chain constituting the material changes from a configuration A to a configuration B and thereby becomes unable to elongate again. Except for a small elastic deformation of both structures, the elongation is proportional to the fraction of the material in the B configuration. The two components are assumed to be in solution with one another, and the rates of transformation are then proportional to the relative abundance of the transformed species. These rates are written in the manner of the Eyring theory of reaction rates. Systems of more than two components are discussed and several examples are calculated. The calculated curves show good qualitative agreement with stress-strain curves of the nylon-wool-rubber type.

Measurement of Friction Between Single Fibers

Nils Gralen and Bertil Olofsson, Textile Research Journal, page 488, Volume XVII, No. 9, September, 1947.

An apparatus has been developed to measure the friction between two single fibers which measures both static and dynamic friction. A number of measurements on both wool and artificial fibers are reported. The anti-scale frictional coefficient of wool has values up to unity but with a great dispersion. The with-scale frictional coefficient is much lower and has a small dispersion.

The frictional coefficient is approximately linearly dependent on the inverse value of the normal pressure between the fibers. The dynamic frictional coefficient is independent of the velocity of the fibers, at least for velocities up to 1.5 cm./sec.

Suggested uses for the apparatus are discussed.

Absorption Spectra in the Detection of Chemical Changes in Cellulose and Cellulose Derivatives

J. W. Rowen, C. M. Hunt and E. K. Plyler, Textile Research Journal, page 504, Vol. XVII, No. 9, September, 1947.

This paper contains results of the measurement of the absorption spectra of cellulose and cellulose acetate before and after chemical treatments. Measurements in the ultra-violet region were made with the Beckman-model DU quartz spectro-

photometer and in the infrared region with a Perkin-Elmer recording infrared spectrophotometer with a sodium chloride prism. Measurements were made on: cellulose acetate, cellulose acetate oxidized with nitrogen dioxide, cellulose, cellulose oxidized with nitrogen dioxide, and cellulose treated with periodic and chlorous acids.

It was found that acetylation and oxidation of cellulose are reflected by profound changes in the absorption spectra of these materials. The study indicates the possibility of detecting and estimating the amounts of certain groups in cellulosic materials.

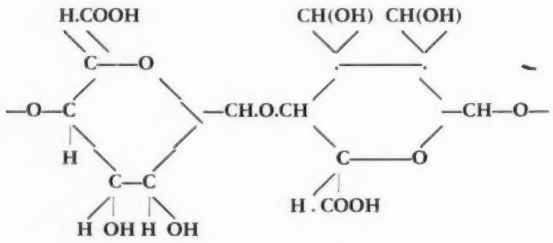
• PATENT DIGEST •

PAUL WENGRAF

Alginic Acid Derivatives—Treatment with Alkylene Oxide G, 1

U. S. Pat. 2,426,125. (Kelco Company, A. B. Steiner, August 19, 1947).

Alginic acid is known for forming insoluble compounds with different salts, for instance with all metals, also alkaline earth metals except magnesium. This property has been used for producing water resistant finishes, as well as for hardening fibers. In other cases this formation of water-insoluble compounds may also be a drawback. The specification mentions the incompatibility with calcium-containing liquids, for instance with milk. Some other possible applications might be added, for instance the manufacture of alginic acid thickeners or finishes prepared with hard water. Alginic acid consists entirely of d-mannuronic acid composed from units:



It has been discovered that it is possible to add a molecule of ethylene oxide or propylene oxide to this mannuronic acid unit and to obtain thereby a water soluble compound which is even compatible with strong acid solutions. Alginic acid is prepared in a pure state from algae ("Kelp"), by extracting it with sodium carbonate, diluting the solution, precipitating the acid as calcium alginate and decomposing the salt with hydrochloric acid. Patents describing this process are U. S. Patents 2,036,922 and 2,036,934. According to an example the dried and purified acid is placed in a closed vessel together with propylene oxide; first the reaction's temperature makes the pressure rise, later on a gentle heat has to be applied. After one hour a product was obtained which is supposed to be a propylene alginate:

R(Mannuronic acid groups) — COO. C_3H_6OH. Some more alkylene oxide molecules may also be connected with R for instance R-COO-C_3H_6O-C_3H_6OH etc. The aqueous solutions of this product are highly viscous. Because of their indifference to various reagents they seem to be well suitable for sizing, thickening, finishing agents, for the use as protective colloids, etc.

References cited by the Patent Office are amongst others:

U. S. Pat. 2, 158,486-7—ex 1939 (Kelco Products): Alginates of triethanolamine are used for coating, for food products and the like.

U. S. Pat. 2,202,169, 1940 (I. G. Farbenind.): Wool is treated with ethylene oxide to make the material resistant to pests.

U. S. Pat. 2,337,562, 1943 (Jacques Wolf & Co.): Purifying sea moss by lixiviating it with water, adding an aqueous solution of a lower aliphatic alcohol (isopropanol) and separating thereby the inorganic salts contained as impurities.

Other References are:

U. S. Pat. 2,344,688, 1944 (Valentine Laboratories): Alginic acids give, in mixture with alkylcelluloses, emulsifying agents.

U. S. Pat. 2,380,166, 1945 (Atlas Powder): Esters of polyhydric alcohols, for instance mannitan-monolaurate, can further be etherified with ethylene oxide; the products are emulsifying agents.

U. S. Pat. 2,405,973, 1946 (Sec. of Agriculture): Etherification of degraded starch by an alkylating treatment with diethyl sulfate.

Alkyl esters of alginic acid have been described by Lucas and Stewart (Kelco Chem. Company Fellows) in J. Am. Chem. Soc., 1940, p. 1792 and 1070. Methylated alginic acid was prepared by reacting an ethereal solution of diazomethane upon freshly precipitated alginic acid. These products however as well as the reactions products of carbohydrates with dimethylsulfate are quite different from the ethylene addition products described here above in that they are sparingly soluble or dispersible in water. Many pertinent references to this interesting matter can be found in the last mentioned two articles in J. Am. Chem. Soc.

Flameproofing, Antimony Compounds in Solution G, 2, 03

U. S. Pat. 2,427,997. (C. B. White, Sept. 23, 1947).

The inventor relates to the requirements of Federal Specification CCC-D-746, amended by 242, regarding the grades of fire resistance for ducks, cotton fabrics, etc. Material which meets the requirements of these specifications is generally prepared by the application of fire resistant paints consisting of chlorinated organic substances (chloroparaffins, chlorinated rubber) as carriers or vehicles of appropriate pigments. These paints or coatings have the drawback of requiring large quantities of plasticizers which increase the tackiness of the fabrics and moreover they have the disadvantage of rubbing off so that they cannot be used for clothing. The present invention uses instead of fire resistant painting compositions *fireproofing solutions* penetrating into the interior of the fibers. The active ingredients of these solutions are insolubilized. These materials can either be dissolved in aqueous or in organic solvents. Thereby the quantity of impregnating material (the "loading") is said to be reduced from 40-60%. Antimony trichloride $SbCl_3$ is known to be fire resistant but it is transformed upon contact with water into SbOCl and HCl, the latter being deleterious to the fabrics. If however the fabric is—according to the present in-

vention—first prepared with a carbonate or acetate, insoluble in alcohol, it is possible to impregnate upon the fabric antimony chloride, dissolved in a hydrocarbon solvent without any attack by HCl. Hydrochloric acid is developed in a further contact of the organic solvent solution with water (which is always present in cellulose fabrics) but neutralized by sodiumcarbonate. The equation of this reaction runs as follows: $2\ Sb\ Cl_3 + 3\ Na_2CO_3 = Sb_2O_3 + 6NaCl + 3\ CO_2$. Thus, after finally washing the fabric the excess sodium carbonate and sodium chloride are removed and the insoluble Sb_2O_3 remains deposited within the fiber and no attack has to be apprehended. But antimony oxide by itself does not prevent afterglowing so that it is necessary to add chlorinated paraffin and a plasticizer such as tricresylphosphate to the organic solution.

References, cited by the Patent Office are amongst others:

U. S. Pat. 2,299,612, 1942 (Hooper & Sons): Chlorinated paraffins plus oxides or sulfides of antimony are used as flameproofing agents.

U. S. Pat. 2,044,176, 1936 (Westinghouse El.): Non inflammable paints comprise chlorinated rubber as a carrier and Sb_2O_3 as flameproofing agents.

U. S. Pat. 2,306,862, 1936 (Celanese): Describing a treatment of esterified cellulose with $SnCl_4$ and sodium phosphate silicate.

Am. Dyest. Rep. of July 5, 1943 p, 297-301 (Van Tuyle): Discusses the fireproofing method, developed by the Chemical Warfare Service. It consists of an impregnation with Sb_2O_3 and Vinylite. The flameproofing agent is neither here nor according to the foregoing references applied by precipitation from two components *in situ*.

Other References are: Insoluble metallic oxides, precipitated from metal solutions within the fibers (for instance tin oxide) are described in Leatherman's U. S. Patents 1,990,392, 2,012,686 and 2,-017, 805.

Starch Treatment—Phosphoric Acid G, 1

U. S. Pat. 2,424,992. (Lee Foundation of Nutrit. Res., R. Lee, Aug. 5, 1947).

This invention relates to phosphorized starch. It is principally intended for nutritional purposes but the product has probably also some useful properties in textile applications such as textile sizing, finishing or thickening. Phosphoric acid (85%) is added to a carrier of pulverized starch and forms therewith a non-hygroscopic dry powder. The acid is diluted 1:1 in a suitable volatile organic solvent for instance ethanol or acetone; a thin colorless solution is formed. This solution is mixed with finely divided pulverized dry starch. To bring about the reaction it is usually sufficient to dampen the starch with this solution without forming a paste. The organic solvent is evaporated and the phosphoric acid is distributed in fine dispersion within the starch.

References cited by the Patent Office are amongst others:

U. S. Pat. 2,195,596 (Squibb & Sons): describing an alimentary therapeutic tablet composed from calcium lactate, dextrose, sugar, calcium phosphate and the like.

The phosphoric acid obviously transforms here the starch into a more soluble form as it is described for similar dextrinating processes in which starch is dampened with concentrated acid solutions and dried. Therefore also this process principally intended for preparing food material can certainly be used for producing uniformly solubilized starch compounds.

Other references: It is known to improve the solubility of starch by adding meta- or polyphosphates (of the series $Na_5P_3O_{10}$ —$Na_{11}\ P_9O_{28}$) according to Ger. P. 644,027 (Henkel) or by adding di-or triphosphates (according to Ger. P. 647,997, Holste). An analogous process is apparently also described in Ger. P. 621,978 (Flesch): starch, previously pasted with organic solvents is stirred into cold sulfuric acid (0°C). This reaction may be similar in some way to the reaction protected by the present patent, but the Lee patent is supposed to give not only solubility but also nutritive values to the starch treated with concentrated phosphoric acid.

Correction

Re: Screen Printing Apparatus

The patent regarding a screen printing apparatus (D,4) on page 578 of the October 6th issue was correctly reported as re-issue 22,835 but the older patent to which it related was misquoted as 2,-326,290 instead of 2,369,290.

TRADE NOTES • NEW PRODUCTS

• Nominations, Chemical Salesmen

J. Robert Fisher, of the Fisher Chemical Company, New York, has been nominated as 1948 president of the Salesmen's Association of the American Chemical Industry, it was announced recently by Frank G. Fanning, of Frank G. Fanning Company, New York, chairman of the association's nominating committee.

Others named on the slate are: *vice-president,* William C. Harmon, Jr., Calco Chemical Division of American Cyanamid Company, Bound Brook, N. J.; *treasurer,* John Seidler, Whittaker, Clark & Daniels, Inc., New York; and *Secretary,* Paul W. Hiller, Innis, Speiden & Co., New York.

Gerald S. Furman, Merck & Co., Rahway, N. J., and Edward A. Bush, Bush Aromatics, Inc., New York, have been nominated as members of the board of directors for three-year terms, and Robert J. Milano, Millmaster Chemical Company, New York, has been selected for a one-year term.

Ballots have been sent to the members and the voting will be completed by December 15.

• Joins National Cotton Council

Earl E. Berkley, well known for fiber research, has joined the technical staff of the National Cotton Council. Dr. Berkley leaves the Bureau of Plant Industry of the U. S. Dept. of Agriculture where he was employed for the last ten years.

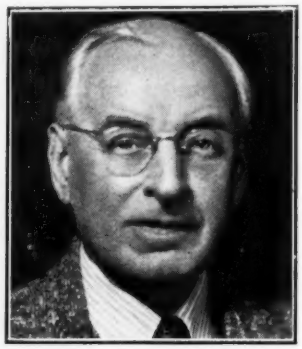
Following a period with the Cellulose Research Corporation, where he worked on purification of cellulose for use as chemical cellulose, Dr. Berkley transferred to the Department of Agriculture in 1936. From 1936 to 1945 his attention was devoted to research on cotton fibers, but since 1945 about half his time has been spent in work on other natural cellulose fibers.

At the Council, Dr. Berkley will be available for cooperation with the various textile laboratories in their research work on cotton. He will also act as an advisor to the Cotton Advisory Committee of the U.S.D.A. on establishment of research projects to fill up the gaps in cotton's research program.

OBITUARY

HOWARD S. NEIMAN

HOWARD S. NEIMAN, patent attorney and former editor and publisher of the *Textile Colorist,* died on October 31st at the Methodist Hospital in Brooklyn at the age of 79.



Howard S. Neiman

Mr. Neiman was born in Morristown, Pennsylvania. He received his B.S. degree from Lehigh University in 1888 and was associated with the dyestuff and chemical industries for many years. At the age of 23 he became superintendent of the Albany Coal Tar, Dye and Chemical Company and later served as technical expert for William J. Matheson and Company, Ltd., Matheson White Lead Company, Leopold Cassella & Co., H. A. Metz and Company, and others. He made twenty-six trips to Europe in connection with the study of dye production and application.

After leaving the H. A. Metz and Company, he studied at New York Law School, and then set up offices as patent and trademark attorney, the profession he was actively practicing at the time of his death.

From 1918 to 1944 he was editor and publisher of *Textile Colorist* which was then sold to the Howes Publishing Company and now published by them under the name *Textile Colorist and Converter.* Mr. Neiman's editorials were widely read and enjoyed. During the summer months it was his practice to live with his family on a house boat and on its upper decks he fashioned some of his most important writings. He was also an associate editor of *The American Perfumer* and the author of numerous articles on organic chemistry, coal tar dyes and other subjects for trade and technical journals. He was a weekly contributor to the *Albany Post* for several years.

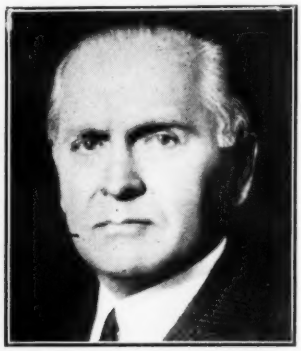
During World War I he served with the U. S. Secret Service.

He was a charter member of the American Institute of Chemists and served as its secretary from 1926 to 1946, when he was appointed Honorary Secretary. He was a member of the American Chemical Society from 1893 and a member of the American Association of Textile Chemists and Colorists for many years. Other organizations of which he was a member included: Synthetic Organic Chemical Manufacturers Association, Chemists' Club, Theta Delta Chi, Old Colony, the old Pleiades Club of which he was four times president, and the Manhasset Bay Yacht Club. He was president of the Municipal Opera Association and a Mason, Knight Templar and Shriner.

He is survived by his wife, a son and a grandson.

EDWIN M. ALLEN

EDWIN MADISON ALLEN, former chairman of the board and former president of The Mathieson Alkali Works, died on November 2 at his home in Rye, N. Y. He was 75 years old and was a director of that company at the time of his death.



Edwin M. Allen

Mr. Allen was born in Richmond, Ind., on June 10, 1872, and was graduated from Purdue University with a degree of B.S. in Mechanical Engineering in 1896. Three years later, he received the degree of Mechanical Engineer from the same university.

His first position was that of apprentice machinist, which he held with the Porter Locomotive Company in Pittsburgh, Pa., while he was taking graduate work at Purdue. After receiving his M.E. degree, Mr. Allen joined the Cambria Iron Company in 1899, as secretary-treasurer. Later he became president of the firm and of its subsidiary, Basic Brick Company.

In 1906, Mr. Allen formed the American Refractories Company, in Los Angeles, Calif. Three years later, he expanded this company's activities by the formation of an affiliate, Austro-American Magnesite Company, with a plant in Badenthein, Austria.

In 1919, Mr. Allen joined the Mathieson concern as president. He was made chairman of the board in 1938, and continued in the two posts until his retirement as president in 1944. He resigned as chairman of the board in 1946.

Mr. Allen's activities when he became president of the Mathieson firm included an almost complete rehabilitation of the company's operations, including a seven-year rebuilding program and the formulation of a plan for selling the company's chemicals directly to the consumer, then a revolutionary idea in the heavy chemical field. He also formed the traffic and technical service departments of the company and extended the company's research and development facilities.

It was under Mr. Allen's guidance that the site for the company's third plant at Lake Charles, La., was chosen, leading to the development of that city as a leading industrial center of the southwest.

Mr. Allen was a director of the Chase National Bank, the Manufacturers Trust Company and the Kansas City Southern Railroad. He had served three terms as president of the Manufacturing Chemists' Association.

During both World Wars, Mr. Allen served as chief of the Army Chemical Warfare Service in the New York Procurement Division. During the Second World War he also served as a member of the Army and Navy Munitions Board.

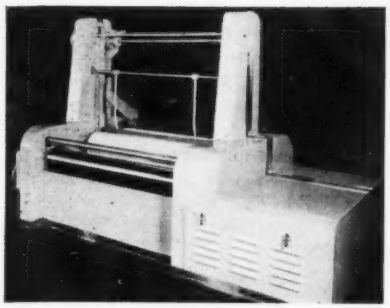
• "Appearance Designing" by Butterworth

A plan to improve the appearance of textile equipment through "appearance designing" was recently announced by H. W. Butterworth & Sons Company, Philadelphia.

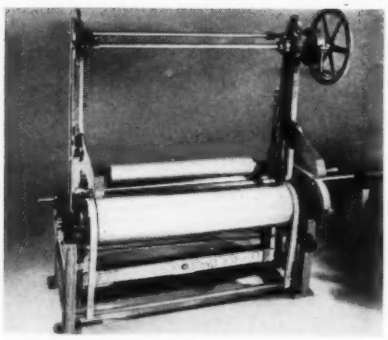
Under a new streamlined steel cover is the well-known Butterworth Simpson Cloth Winder. In appearance the machine is radically changed. In performance it is superior to any Winder ever built by the Butterworth organization.

This improved pneumatic Cut-off Winder is equipped with pneumatic cut-off and automatic slitter. The cloth can be cut and the next roll begun all in one automatic operation. The pneumatic Cut-off Winder is said to save refinishing of up to 50 yards of cloth that normally is spoiled in completing one roll and beginning another. It also is said to save time, and save workers the strain of heavy lifting.

It is stated that final results have proved that appearance designing accomplishes more than increased eye-appeal. The cover



The new and improved Simpson pneumatic cut-off machine is said to be fully automatic, including hydraulic controls, operating rod, metal gate, mechanical pushing arms and operating lever, and deflecting bar. Streamlined cover as illustrated is optional. Attachments needed to make existing equipment fully automatic is furnished by Butterworth.



Compare this pre-war Simpson cut-off winder with the latest type Simpson pneumatic cut-off machine, both built by Butterworth. This machine, now years behind in performance as well as appearance, is still in use in many mills where it is said to save the refinishing of upward to 50 yards of cloth that is ordinarily soiled in the completing of one roll and the beginning of another.

protects the working parts from dirt and foreign matter, thus reducing maintenance problems. Workers are protected from moving parts. In the case of washers, etc., the liquor is prevented from leaking and splashing. The covers are designed for quick, easy removal when adjustment, repairs or cleaning becomes necessary. The machine is equipped with individual motor drive and has centrally controlled lubrication.

• Representative, Riggs & Lombard

Riggs & Lombard, Inc., Lowell, Massachusetts, announce the appointment of Charles H. Dunker as their West Coast Representative.

Mr. Dunker, whose present address is 701 7th Street, Coronado, California, will have exclusive sales rights of the Riggs & Lombard "Fleet Line" of textile finishing equipment in California, Oregon, Washington and British Columbia.

• Hercules Resin Booklet

A new technical booklet which for the first time includes a description of the properties and uses of all Hercules Powder Company synthetic resins is now available.

Hercules synthetic resins, most of which are rosin-base, have found application in a wide number of industries including protective coatings, adhesives, printing inks, paper and textile sizes, linoleum and floor tile, and essential oils and fixatives.

A key to specific uses for Hercules synthetic resins is provided on pages 10 and 11 of the book by a chart which matches the resins with their actual and potential uses. The chart also includes the page number on which the various resins are discussed.

Brief descriptions of the following groups of resins are included in the book; Methyl esters of Rosin; the Cellolyns, first group of synthetic resins designed primarily for cellulosic lacquers; Ester Gums; Flexalyn Resins, glycol esters of rosin; the Lewisols, a series of rosin maleates; the Pentalyn series of pentaerythritol resins; Petrex Resins; Poly Pale Esters; Staybelite Esters.

• Bulletin on Crepe Yarn Soaking

Raythro 75, a soaking compound that is said to speed up the production and improve the quality of rayon crepe yarns, is described in a four-page technical bulletin recently released by the Textile Chemicals Division of L. Sonneborn Sons, Inc., New York. The softening action of the compound, the bulletin states, results in fewer breaks during winding and twisting and permits skeins to be opened up more readily for drying.

Suitable for machine soaking in either skeins or cakes, the compound—a homogeneous, soft wax—is said to be perfectly compatible with conventional sizes and water-soluble tints. Completely saponifiable, it is easily and uniformly removed in the boil-off. It is stated that the compound contains no mineral oil or other volatiles and is especially treated for maximum resistance to oxidation, odor development and yarn discoloration.

The bulletin outlines the components to be used in the soaking bath and describes the preparation of the bath, the actual soaking operation and the extraction and reclamation of the liquor for replenishing the bath. Also included are typical basic formulas for producing low, medium and high pebble finishes in 75 and 100 denier viscose crepe yarns.

A copy of the Raythro 75 bulletin may be obtained by writing on business stationery to the Textile Chemicals Division, L. Sonneborn Sons, Inc., 88 Lexington Avenue, New York 16, N. Y.

• Carbide and Carbon Exhibit

Carbide and Carbon Chemicals Corporation's exhibit at the Exposition of Chemical Industries in New York will feature processing operations using synthetic organic chemicals. The display will indicate graphically how chemicals can be used in the processing of solids, liquids, and gases.

Particular attention will be devoted to the method of shrinkproofing rayon with glyoxal. Another field that will be given special consideration is the manufacture of lacquers with "Cellosolve" solvents and "Flexol" plasticizers. In a separate section, the recovery of solvents with "Columbia" activated carbon will be illustrated. Carbide technical representatives will be present to answer questions on these and other processes.

• Resin Representative, American Cyanamid

R. E. Sumner, manager of American Cyanamid Company's Textile Resin Department, announced the appointment of S. P. Young as Technical Field Representative. Mr. Young will work under the direction of R. W. Angstadt, Southern Sales Manager in charge of ACC's Charlotte, N. C., office.

Mr. Young has been associated with the technical staff of ACC's Textile Resin Application Laboratories at Bound Brook, N. J., dealing with the theoretical and practical problems involved in the application of Lanaset Resin for wool shrinkage control, Sheerset Resin, Aerotex Softener H, and the many other chemical finishes offered by the department.

• Re-enters Dyestuff Field

With the offering of Alizarine Cyanine Green 4G, the first of several new acid alizarine dyestuffs, Patent Chemicals, Inc. is re-entering the field of textile dyes. While one of the first manufacturers of Alizarine Cyanine Green and Alizarine Blue Black in 1925, Patent Chemicals, Inc.

Plant of Patent Chemicals, Inc.

restricted their operations from 1930 to the oil soluble anthraquinones and other colors for the petroleum field. After the fire in 1944, destroying their Jersey City plant, manufacturing operations were transferred to the new plant at 335 Boulevard, Paterson, New Jersey.

J. W. Orelup, president, stated that while new developments have been slower than anticipated due to shortages of raw materials and equipment, several new products are now on a regular plant scale.

• Zurn Nylon Oil

It is claimed that hosiery seconds or irregulars can be reduced to as little as 2% through use of a new Zurn product, trade-named Nylon Oil No. 82. This product was specifically developed to prevent pick-ups and pulled threads in running 10, 15 and 20 denier nylon.

Nylon Oil No. 82 is used straight and not in an emulsion with water or other products and is said to be blended so that it will not be affected by dyeing or preloarding. In operation, the thread is passed through a slit in a piece of saturated felt which extends from a cup containing Nylon Oil No. 82. These cups are available in quantity from O. F. Zurn Company and can be used on full fashioned or seamless hosiery machines. Hosiery mills desiring to test the practicality of Nylon Oil No. 82 are invited to write for samples to O. F. Zurn Company, 2736-38-40 N. Broad Street, Philadelphia, Pa.

• New Plexon Yarn

A unique new yarn designed to meet demands for fire-retardant decorative fabrics, upholstery and draperies was announced by Plexon, Inc., New York.

The new Plexon is said to be fire-retardant and self-extinguishing. It is stated that it is a basic synthetic yarn with such other features as being immune to oil, grease, mild acids, mildew and rot. It is claimed to be impervious to weather, and to be color fast and fade-proof.

Forty-five colors are available in many sizes ranging from .007 to .030 of an inch in diameter. Automobile seat coverings woven of the new Plexon are already in production, according to the company, which is also working on much finer yarns for such uses as table linens.

The new yarn is produced at the Plexon, Inc. plant in Greenville, South Carolina. Offices of the company are in New York.

• Specialties Department, American Key Products

American Key Products, Inc., 15 Park Row, New York City, distributors of domestic and imported starches, announces the formation of a Specialties Department to handle the sale of dextrines, glues, gelatins, natural gums, casein and related products.

John A. Lowander, a former vice president of Stein Hall & Co., Inc., New York, with whom he was connected for twenty-four years, will manage the new division.

• Enlarged Plant Facilities For Butterworth

H. W. Butterworth & Sons Company are in the process of enlarging their plant facilities at Bethayres, Pa. Begun a year ago, this modernization and expansion program is designed to cut the firm's backlog of textile machinery orders.

At present the Machine Shop is being enlarged. Expected to be in use by January 1st, this new extension will be used for machining of castings and carting of finished equipment for export. Built directly onto the Foundry buildings, this one-story structure, 180 feet long by 90 feet wide, will create employment for another 75 machinists and other shop help.

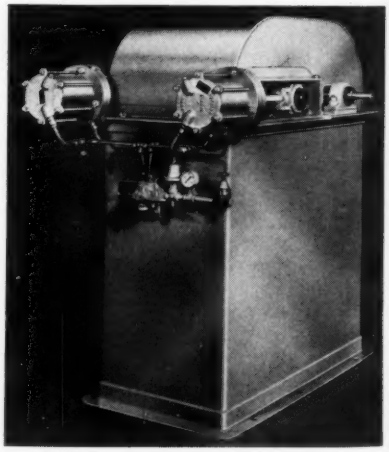
Rearrangement of the Stock Storage Department is included in this expansion program. Quonset huts have been erected at Bethayres and the movement of stored materials from the main plant in Philadelphia has increased assembly space there. In addition, 30 standard machine tools have been bought and three special machine tools were designed by Butterworth Engineers. Future plans call for enlarging the Foundry itself.

Cost of construction of new buildings and installation of new machines and equipment on this 22-acre tract at Bethayres, Pa., will amount to more than $225,000.00.

• Rope-type Squeezer

A new Rope-type Squeezer has just been announced by The Wiesner-Rapp Company of Buffalo, N. Y., designers and builders of textile finishing machinery.

One of the many outstanding features claimed for this functionally-designed Wiesner-Rapp Squeezer is the adjustable pneumatic pressure on the rubber rolls which is preset to meet the varying pressure requirements. A conveniently located dial tells at a glance the pressure on the rolls. The roller bearing take-up units on the rubber squeeze rolls nearest the pneumatic cylinders are mounted on rails to permit the entire roller assembly to ride back and forth according to the thickness of the cloth and at the same time exerting constant pressure. This particular feature which provides "give" is said to increase the life of the rolls, due to shock being taken by the penumatic cylinders instead of the rubber.



Wiesner-Rapp Rope-Type Squeezer.

The 2 squeeze rollers are located side by side instead of one on top of the other. By placing the rolls side by side the extracted liquid is squirted straight down into the tank and not over the surrounding floor and equipment. Both squeezer rolls are standard and interchangeable for replacement.

The entire Squeezer is all-welded, stainless steel construction except the pneu-

matic mechanism. All-welded construction provides smooth joints which are said to eliminate any possible catching and tearing of the material in process. Stainless steel eliminates the possibilities of staining the material from water or chemical reactions.

This Wiesner-Rapp Squeezer is compact requiring only 53½" x 29½" floor space and 64" high.

Complete information on this Wiesner-Rapp Squeezer is available from The Wiesner-Rapp Co., Inc., Buffalo 11, N. Y.

• German Report on Resin

Two German methods for the production of chlorinated high molecular weight polyvinyl chloride resin, used in Germany for adhesives, lacquers, fibers and for other purposes, are described in a report now on sale by the Office of Technical Services, Department of Commerce.

The report was prepared by Clayton F. Reubensaal, OTS investigator, following a study of the processes at the Bitterfield and Rheinfelden plants of I. G. Farbenindustrie.

Orders for the report (PB-77677; *Chlorinated polyvinyl chloride;* mimeographed, 50 cents; 19 pages) should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

• Humidity Indicator

A new quick-reading all-metal Humidity Indicator, designed for use in industry and laboratory, has been announced by the Weston Electrical Instrument Corporation, Newark, N. J. The Indicator is said to provide readings of relative humidity accurate within ±1% for general conditions.

Weston Humidity Indicator.

The instrument is of wet and dry bulb type, featuring all-metal Weston Laboratory Thermometers, self-supporting wet-bulb wick covering the thermal element, sturdy all-metal construction, and a simplified Slide Rule Calculator giving relative humidity reading directly, thus eliminating the need for tables or psychrometric charts. The unit is light and well balanced, and can be swung if desired to create air movement. The only maintenance necessary is to change the wick occasionally and replenish the water in the reservoir, which is a heavy-walled, large-capacity jar, covered to reduce undue evaporation.

• Club For Overseas Business Men

International Business Services, a London-Club-cum-office for overseas business visitors, is said to have completed its first three months with great success.

Since it opened in July, a number of business men from all over the world have made use of the comfortable house in Arlington Street, Piccadilly, with its reading rooms, its multi-lingual reception and secretarial staff, and comprehensive business and personal services. The visitors' book shows recent entries from the United States, Australia, Canada, China, France, Colombia, Holland, India, Mexico, Newfoundland, Palestine, the Philippines, South Africa, Switzerland and Uruguay.

One service particularly in demand is the Trade Information Bureau, which puts visitors quickly in touch with the business contacts they require. To supplement this, IBS are now arranging a permanent exhibition on the premises of goods available for export.

• Honors 50 Year Official

"Contrasting the dyestuff business when I started in 1897, with the business today, is easy," John Crowther, of General Aniline & Film Corporation, told Jack Frye, Aniline President, and a group of his colleagues recently. "There wasn't any dyestuff industry in America in those days. We depended on imports," Mr. Crowther said. At a brief ceremony in the executive offices of General Aniline held to celebrate his fifty years with the Company, Crowther recalled many incidents of his long association with the dye business. Many of these were illustrative of the strides made in the past twenty-five years establishing the present independence and superiority of the American dyestuff industry.

"Prior to World War I, Becker in Brooklyn, Schoellkopf in Buffalo, and our Company in Rensselaer were the only producers, and the volume was insignificant, and, moreover, imported intermediates formed the basis of what was made into finished dyes. I suppose the greatest single advance came with the introduction of the Vat Colors in the twenties. Then, for the first time we had something we could really boast about—dyes that were permanently fast to light and washing."

Mr. Crowther started as an office boy for "Farben Fabriken of Elberfeld," predecessor of General Aniline, and both he and Robert Moore, retired General Aniline employee now living in Rutherford, N. J., and the man who gave him his first job, have recalled that many customers complained about the difficult name and it became necessary to have rubber stamps bearing the name made for their customers to use on order blanks.

Mr. Crowther, head of the Order, Pricing and Shipping Department, was tendered a U. S. Savings Bond and an embellished scroll in recognition of his long service. He plans to continue working for an indefinite period.

• Managers' Conference, U. S. Testing

Advances made in quality control testing and the greater awareness on the part of manufacturers, processors and all industry to the necessity for laboratory research and development work, was brought out in the semi-annual Managers' Conference of the United States Testing Company, Inc., held during the week of October 20, at the main laboratories of the Company at Hoboken, New Jersey.

Branch Managers present at the Conference were: F. P. Brennan, Los Angeles Branch; E. J. Donohoe, Philadelphia Branch; S. J. Gillie, Woonsocket Branch; J. A. Nary, Chicago Branch; R. T. McAndrew, Boston Branch; T. C. Ridgway, New York Branch; and Berry Duff, Western Representative located at Ft. Collins, Colorado.

• Standardization of the pH Scale

In view of the increasing need in science and industry for accurate determinations of acidity, the National Bureau of Standards is recommending the universal adoption of a single standard pH scale, analogous to the International Temperature Scale. It is proposed that the pH assigned to solutions of buffer substances distributed by the Bureau as Standard Samples be taken as the fixed points on this standard scale.

In an effort to encourage standard procedure in pH measurements, the National

Bureau of Standards is now supplying four buffer materials in the form of Standard Samples of certified purity. These substances are acid potassium phthalate, potassium dihydrogen phosphate and disodium hydrogen phosphate (intended to be used together), and borax. They are being distributed at the rate of several hundred samples annually. The certificates furnished with these compounds specify the pH of certain aqueous solutions of the sample, which can provide fixed points on a pH scale.

In order to assign exact values to these fixed points, it was necessary to set up a scale based upon some suitable definition of pH. A consideration of the advantages and limitations of several scales led to a choice of a modified activity scale as most convenient and practical for general use. Although the activity of a single ionic species can be simply defined only in very dilute solutions, the influence of the hydrogen-ion activity in chemical equilibria is of far-reaching importance.

The pH of the NBS standards is derived from measurement of the electromotive force of cells without liquid junction, in which they are used as electrolytes. These cells are specially designed, utilizing the highly reproducible hydrogen and silver-silver chloride electrodes. Computation of pH is based upon several reasonable assumed relationships between ionic activities and mean activities. These assumptions are found to give identical values for dilute solutions. The scale thus obtained approaches a true scale of activity for solutions of low concentration; at higher ionic strengths it is best regarded as a consistent scale which necessarily rests upon an assumption not subject to experimental proof.

• Nopcogens

An interesting series of cationic surface active chemicals is now in production by Nopco Chemical Company, Harrison, New Jersey. Known under the trade name Nopcogen, these products are said to possess unusual physical and chemical properties, attributed to the combination of fatty nuclei and nitrogenous chemicals. The higher molecular weight members of the series show an increasing degree of basicity and have an improved and more complete dispersibility in acid mediums. Some members of the series are said to exhibit complete solubility in waxes, petroleum and vegetable oils, and numerous organic solvents.

It is stated that a most outstanding property of these surface active agents is one in which the oil phase of an emulsion is made substantive to cellulose. This property simplifies processing of yarns and fibers and is said to improve markedly the appearance and durability of fabrics.

It is claimed that Nopcogen products have also proved useful as wetting, dispersing and softening agents; also, as antistatic and ore flotation chemicals as well as synthetic waxes.

• NETF Scholarships

New England Textile Foundation, 68 South Main St., Providence 3, R. I., announces that it will award up to thirty $500.00 freshman scholarships in 1948 in the textile schools of New England: Bradford Durfee Technical Institute, Fall River, Mass., Lowell Textile Institute, Lowell, Mass., New Bedford Textile Institute, New Bedford, Mass., and Textile School of Rhode Island School of Design, Providence, R. I.

Scholarships will be awarded on the basis of the student's high school record, as reported by the principal, and marks obtained in an examination given by College Entrance Examination Board on April 3, 1948, in various parts of the country.

Seniors in high school or graduates of high school not over 21 years of age who wish to compete should write direct to the Foundation for application blanks and scholarship booklet.

• To Head ASTM Section

Dr. Louis C. Barail, Chief Bacteriologist of United States Testing Co., Inc., was appointed Chairman of the antiseptic finishes section of Sub-Committee B4 during the meeting of Committee D13 held in Philadelphia, Pa., October 15-17, 1947.

The antiseptic finishes section replaces the former mildew section and Dr. Barail immediately took charge of the section and gave everybody present the opportunity to work on the many problems of a bacteriological nature which remain partially unsolved in the textile and allied industries.

The next meeting of the section has been tentatively scheduled for the second week of January and reports will be presented on the following subjects:

Sterilization and Leaching in Mildew Tests.

Standardization of Burial Test methods.

Testing of Perspiration Preventives.

Modifications of F.D.A. Phenol Coefficient Method.

• Paisley Branch Managers

Percy P. Morningstar has been appointed manager of the New England branch of Paisley Products, Inc., with headquarters at 79 Milk Street, Boston, Massachusetts. Mr. Morningstar has augmented his technical sales staff to improve Paisley's scientific adhesive service in his territory, formerly serviced from the main plant in New York City.

Sam Stewart will direct the Paisley branch office at 15th and Market Streets in the Harrison Building, Philadelphia, Pennsylvania. Mr. Stewart will operate his technical sales force in Pennsylvania, Southern New Jersey, Delaware, Maryland, Virginia, West Virginia, and North Carolina.

• Technical Personnel Manager

Dr. Joseph S. Thomas has been appointed Technical Personnel Manager for Westvaco Chlorine Products Corporation and will join the Industrial Relations Department in New York. He was educated at Bowdoin, Middlebury and Harvard, receiving his doctorate from the latter institution in 1934. Dr. Thomas was an instructor at Middlebury College before being employed by Westvaco in 1935 as a research chemist. Since 1938 he has been Director of the Carteret Division of the Westvaco Technical Department.

• Crimped Rayon Staple

A new crimped rayon staple which, it is claimed, will provide improved texture and appearance for certain types of fabrics, has been developed by the American Viscose Corporation, it was disclosed recently.

The first crimped viscose staple developed, the new product can be used by itself, or it can be blended with wool, cotton or other types of rayon fibers. The staple will be used most effectively where a warm bulk-without-weight fabric is needed as in the case of blankets.

It was also stated that the crimp staple will give a "livelier hand" to higher twist fabrics such as gabardines.

It is claimed that tests have proved the staple also provides greater durability and gives added strength to the fabric. In blends with wool the crimped staple lends a new luster and color interest to the finished fabric.

The new process involves a special spinning of the staple in such a way that a permanent crimp is provided. The crimp is said to be made inherent in the structure of the fiber and washing will only temporarily affect it. Upon drying in a relaxed state, the fiber returns to its full, natural crimp.

SANDOZ PRESENTS *The color achievement of the month*

Tiger Lilies BY TEXTRON

Huge tiger lilies splashed against rayon taffeta, Textron-treated for water repellence and mildew resistance, give a woodsy atmosphere to shower-bathing — a typically dramatic achievement of Textron, Inc.

Helping to give free expression to one of the textile industry's boldest imaginations, Sandoz furnishes Textron with dyestuffs that handle well and easily and hold their character in service.

Among the Sandoz products is also included the CEROL range of waterproofing emulsions. These CEROL products have proved reliable for more than twelve years in the finishing of all types of fabrics — to produce straight waterproof finishes or to combine waterproofing with mildewproofing.

There are specific types for acetate and viscose rayon, cotton and wool. In addition to their high degree of repellency, their high stability enables the finisher to combine them with other finishing ingredients.

For acid, chrome or direct dyes . . . or auxiliary chemicals . . . for both natural and synthetic fibres . . . be guided by the successful "color achievements" you have been seeing in these Sandoz advertisements. Sandoz application laboratories are located in New York, Boston, Los Angeles, Philadelphia, Charlotte, Toronto, where stocks in wide range are carried. Other branches are in Chicago, Paterson and Providence.

SANDOZ CHEMICAL WORKS, INC., 61 VAN DAM STREET, NEW YORK 13, N.Y.

SANDOZ *thinks ahead with textiles*

SANDOZ

New!

ALIZARINE CYANINE GREEN 4G

A FULL GREEN SHADE WITH IMPROVED FEATURES

ALIZARINE CYANINE GREEN 4G is a new single dyestuff of the acid alizarine series possessing the valuable properties of this series plus important improved features.

SHADE: The excellent full green shade cannot be equalled in fastness properties by mixtures of other greens and yellows.

NEUTRAL DYEING: Alizarine Cyanine Green 4G dyes wool from an acid as well as from a neutral bath. The complete exhaustion from a neutral bath is extraordinary and surpasses that of general "Neutral dyeing." Alizarine Cyanine Green 4G possesses good solubility and satisfactory levelling properties.

FASTNESS: Alizarine Cyanine Green 4G has outstanding fastness properties to washing, fulling, milling and sea water. Excellent for carpet yarns, woolens, bathing suits, felt hats, etc.

SOLUBILITY: The excellent solubility of Alizarine Cyanine Green 4G offers a suitable dye for wool package dyeing.

CARBONIZING: Alizarine Cyanine Green 4G possesses very good carbonizing fastness.

LIGHTFASTNESS: Alizarine Cyanine Green 4G possesses excellent fastness to light.

CHROMING: Alizarine Cyanine Green 4G is suitable for use as a shading color in any kind of a dye bath. Its shade is not changed to any considerable degree through chroming; also, suitable for shading purposes in the metachrome and top chrome process.

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Exceptional uniformity and purity

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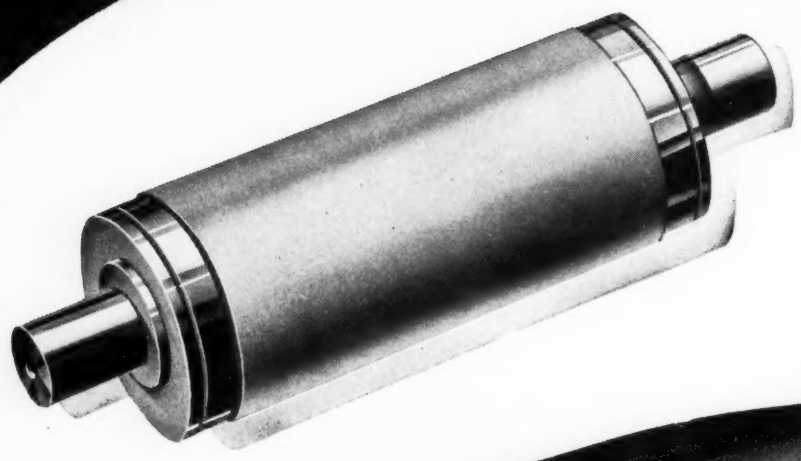

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New TEXTILES,

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Whenever technological gains have been made, we have expanded our testing facilities to furnish facts regarding the worth and serviceability of the new achievements.

In the past we pioneered the development of the Gas Fading Chamber for Acetates, the Warmth Tester, the Coolness Tester; helped bring the Flammability Tester to perfection; and engineered new testing equipment to solve textile problems as they arise.

Today this progressive program goes steadily forward. And we will welcome an opportunity to demonstrate our new equipment in operation at our Hoboken Laboratories. Manufacturers and Processers are cordially invited, not only to visit us, but to bring or submit samples of new materials which have been perfected or are in the process of development.

The Following Literature Available on Request:

- *Testing in Modern Industry*
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- *Core Testing for Determination of Wool Yield and Shrinkage*
- *Standard Textile Regains*
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Stand Up Against Corrosion by Dyehouse Chemicals

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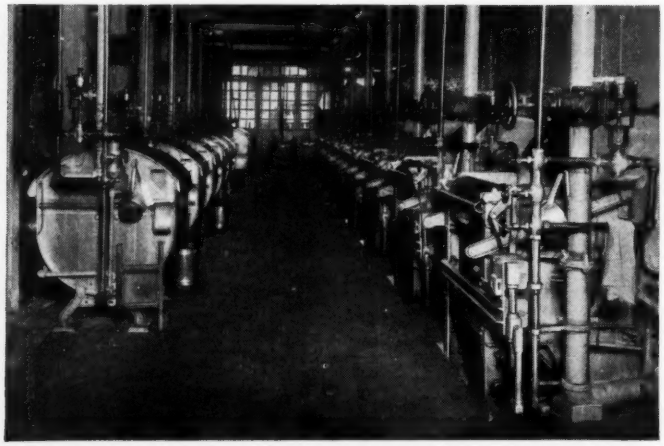


BATTERY OF MONEL *hosiery dyeing machines (both rotary and paddle type) manufactured by Smith, Drum & Co., Philadelphia, Pa. Smooth Monel surfaces safeguard delicate hosiery fibres.*

MONEL has been the preferred metal of the textile industry for more than a quarter of a century.

Monel provides textile operators with a high degree of protection against the corrosive conditions and humid atmospheres encountered in:

1. Hosiery dyeing
2. Dyeing of cotton, silk and rayon
3. Twist setting
4. Moistening boxes
5. Dye tanks and linings

Monel* is rustproof. It has a minimum effect on colors and does not absorb dyes. It lessens the danger of off shades. Monel equipment may be cleaned easily and quickly. No boil out is necessary.

Despite the fact that Monel is both stronger and tougher than structural steel, it is readily fabricated. It retains its essential characteristics throughout its service life, whether in contact with salt, reducing acids, alkalies or dye liquors. Its high strength and lasting resistance to corrosion prolong equipment life — and help keep maintenance costs down.

Write for further information about Monel. There's a complete story in Technical Bulletin T-5, *Engineering Properties of Monel,* which we'll be glad to send upon receipt of your request.

*Reg. U.S. Pat. Off.

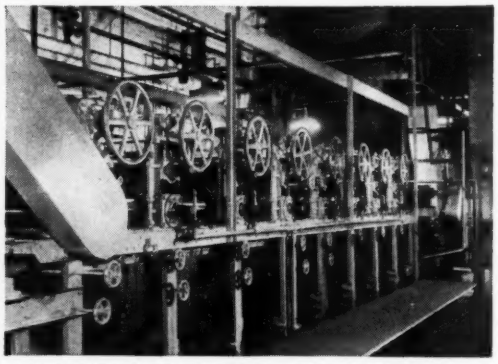
Investigate INCONEL when you need a metal that stands up in all dyeing processes.

This rugged, fool-proof alloy resists strong alkalies, chlorides and reducing acids; it withstands the attack of many oxidizing acids.

Inconel* is successfully used with all types of dyes — acid and acid chrome, direct, vat, sulfur and developed colors. It resists corrosion by dilute hypochlorites and by sizing or other compounds and solutions. Peroxide bleaches have little effect on Inconel, and the alloy itself does not harmfully accelerate decomposition of the bleach.

Inconel — like Monel — exceeds structural steel in strength and toughness. It possesses excellent fabricating and welding properties, and makes possible the construction of extremely durable, long-lived equipment.

You'll find detailed information about this useful nickel alloy in Technical Bulletin T-7, *Engineering Properties of Inconel.* Write us for your copy.



THIS EIGHT-BOX WASHER *and dye padder utilizes 91 corrosion resistant Inconel covered rolls. In service since 1940, its capacity is 3320 yards of automobile upholstery fabric an hour. Inconel covered rolls were fabricated by* The Youngstown Welding & Engineering Co., *Youngstown, Ohio.*

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Present Their Modern Dye House

MODEL UKSAG PACKAGE DYEING MACHINES — closed pressure extractors — Open Stand Pressure Dryers.

Entire operation accomplished in one complete cycle on the same material carriers. All Stainless Steel Construction.

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Cotton and Wool Dyeing Machines — for beams — Package — Raw Stock — Skeins — Rayon Cakes — Dye Spindles — Perforated Tubes — Centrifugal Pumps — Extractors and Dryers.

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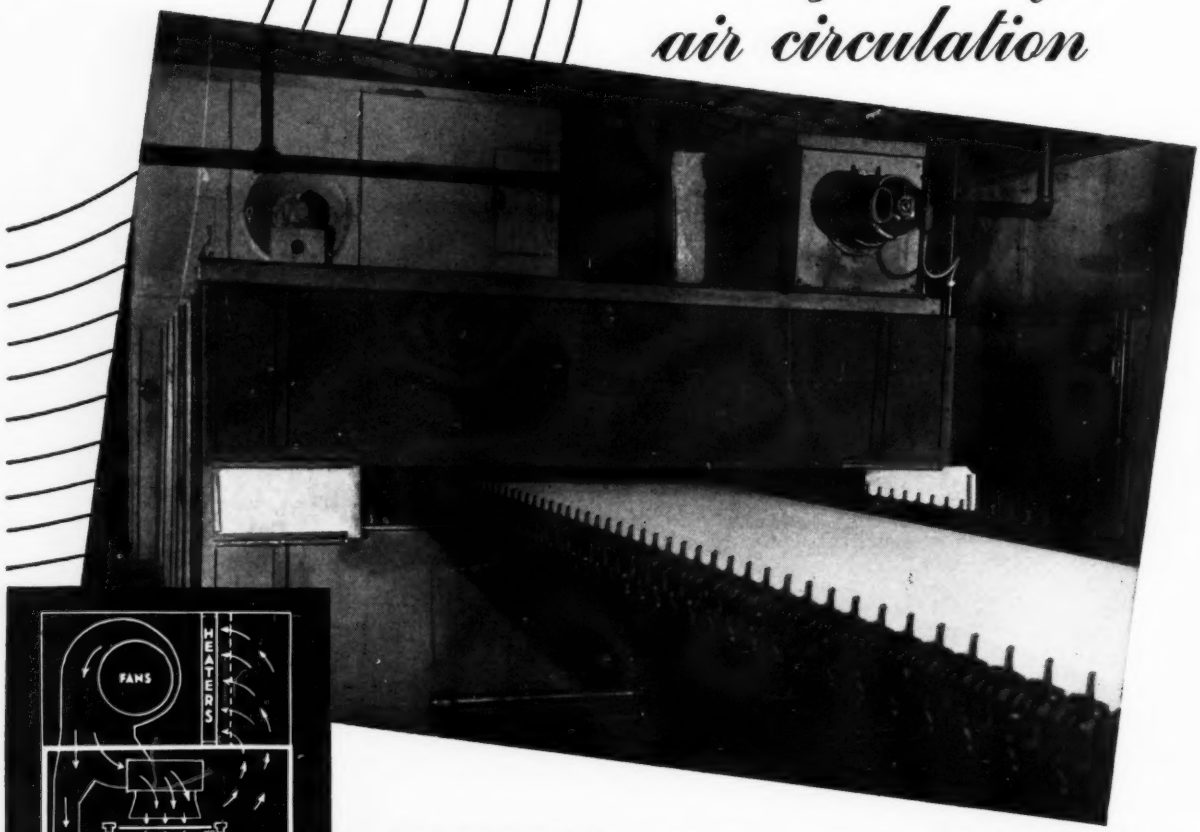
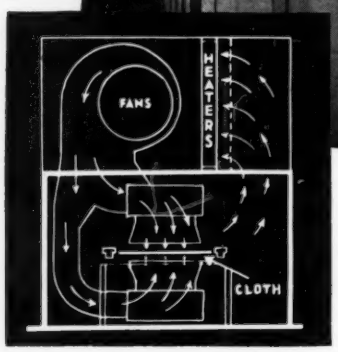
through unique air circulation





PROCTOR *Super-Speed* SYSTEM *Applied to* SINGLE RUN TENTERS

The factor which contributes most to the high speed operation that is possible with this modern system of tentering is air circulation. When a single run tenter is enclosed in a Proctor housing, air at high temperature is impinged through nozzles against both sides of the fabric as it is carried through the drying chambers. Circulating through the goods, this penetration of uniformly heated air reduces drying time and increases output. The proper regulation of moisture in the air, so as to obtain speedy drying without harsh effects on the cloth, has an important bearing on the quality of the finished goods. Of course, output varies with individual plant requirements, length of the machine and the character and weight of the goods—but is always kept to a maximum by this system. Temperatures, air velocity and drying speed may be altered to suit a wide variety of fabrics and finishes. After considerable engineering and development work, this system represents the maximum in the efficient use of horse-power, and making possible decreased drying costs. One of the most recent applications for this system has been in the drying of fabrics preparatory to curing. If the finishing of fabrics which must be held to width is part of your plant operation—investigate the decided advantages of the Proctor "Super-Speed" System applied to single run tenters.

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TEXTILE OILS, FINISHES AND SPECIALTIES

A Complete Line of

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For scouring, boiling-off and dyeing wool, worsted, acetate and rayon. Resists magnesium, calcium, salts and acid. Imparts softening qualities

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Non-oxidizing, cation-active softener for acetate, rayon, silk, cotton, worsted wool.

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Static Inhibitors: also gives excellent softness and lubrication. Used on mixtures, rayon and acetates. Can be applied as a spray on raw stock and staple fiber.

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Penetrator for dyeing, fulling, carbonizing, mercerizing, finishing and sizing all fabrics. Resistant to acid, alkali and all salts used in dyeing and finishing.

PENETRATOR 20-40-50

For fast and efficient wetting and surface reducing action in dyeing and finishing of all fabics.

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For good sanforizing qualities use Sanforol 50, 57 and 105, Stantex Oil 20 and 21. No gumming of shoes or odor developing in cloth. Increases tensile and breaking strength.

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Submit your production problems or special needs to our modern laboratories and trained chemists, without obligation.

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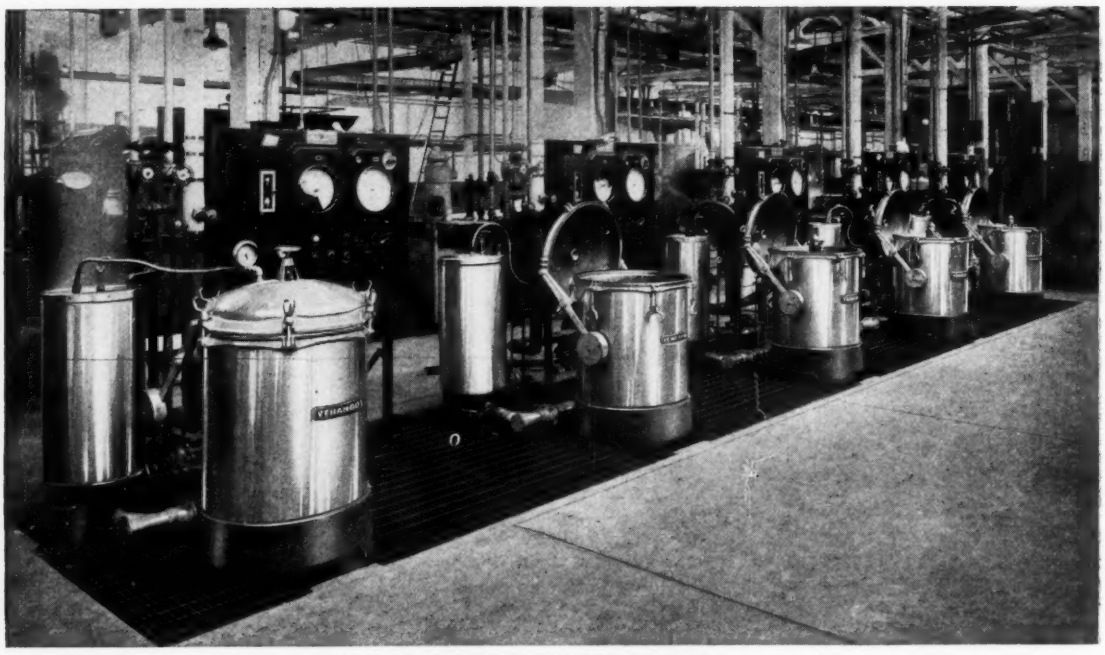
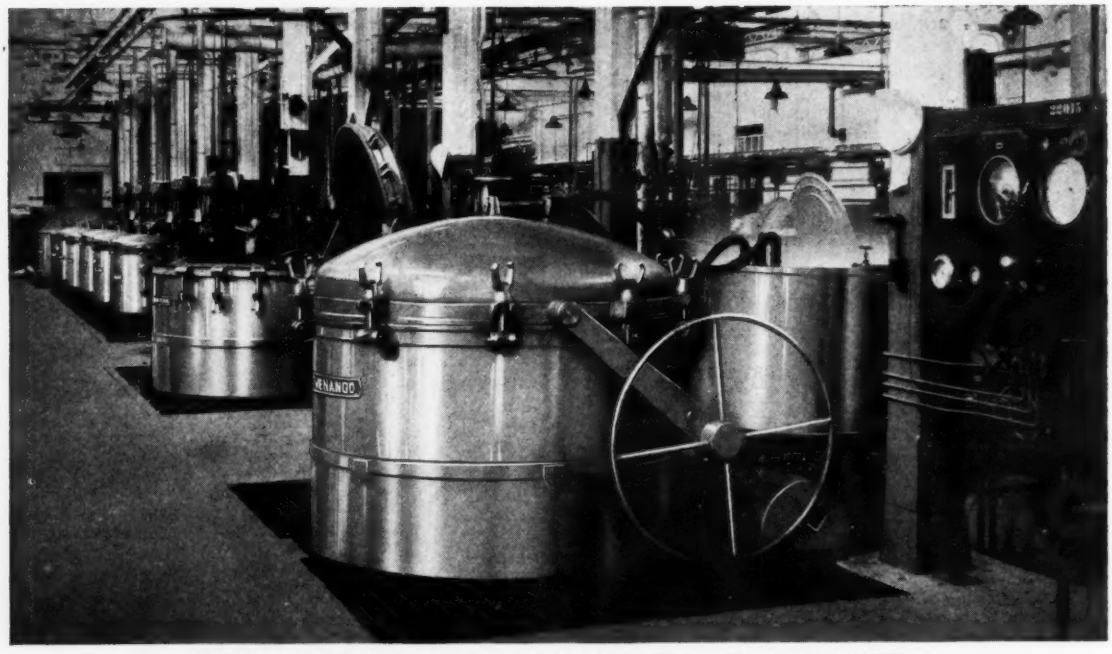
VENANGO COMBINATION DYEING MACHINES



PACKAGE DYEING MACHINE



PACKAGE AND RAWSTOCK DYEING MACHINES (500 lb. CAPACITY)

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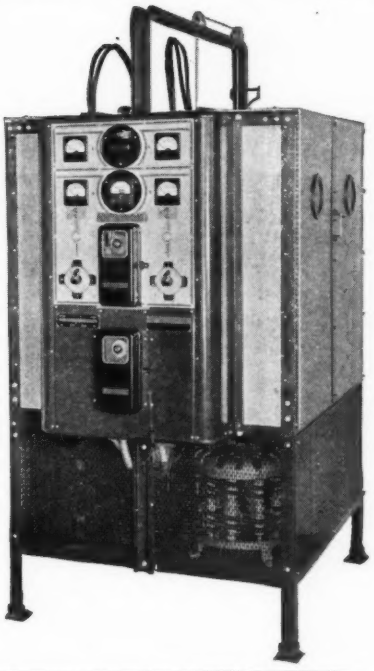
Weathering effects on fabrics accurately reproduced in the laboratory

ATLAS TWIN-ARC WEATHER-OMETER

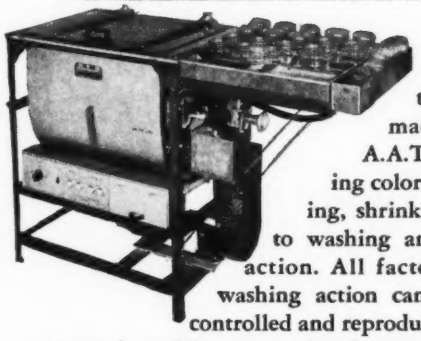
Faithfully duplicates the combined weathering effects of sunlight, rain, heavy dew and thermal shock; accelerated to reduce years of actual weathering to a few days of testing.

The new Twin-Arc Weather-Ometer is equipped to take large size textile specimens in order to meet the new Federal Specifications demanding accelerated weathering tests. Full automatic control of light and water periods is provided by the Atlas cycle timer unit, which can be set to meet standard and special requirements of weathering tests. A direct reading thermal regulator, automatic shut-off switch and a running time meter is included as standard equipment. After setting exposure cycles on the control panel the Weather-Ometer can be safely left in continuous operation over night without attention except to replace carbons once in 24 hours.

The Atlas Weather-Ometer proves the durability of materials under exact conditions of weathering found in actual use in outdoor exposure.



ATLAS LAUNDER-OMETER



The standard laboratory washing machine of the A.A.T.C.C. for testing color fastness, staining, shrinking, resistance to washing and mechanical action. All factors including washing action can be carefully controlled and reproduced identically at any time. The new preheating loading table, increases accuracy of tests by starting all samples at uniform temperature.

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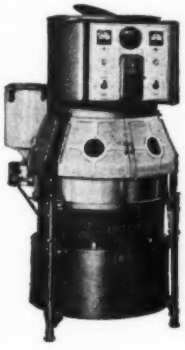
The recognized standard testing machine for determining the fastness to light of dyestuffs and dyed fabrics. Specimens are rotated around the Atlas Enclosed Violet Arc—the closest approach to natural sunlight — in masked holders. Automatic temperature control to within ±3° F. and humidity regulated by a constant reservoir according to requirements of tests. Operation is completely automatic without attention from operator; can be left in continuous operation overnight.



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Originators and sole manufacturers of accelerated testing machines for over a quarter of a century. Weather-Ometer, Fade-Ometer, Launder-Ometer are used all over the world as accepted standard testing machines.

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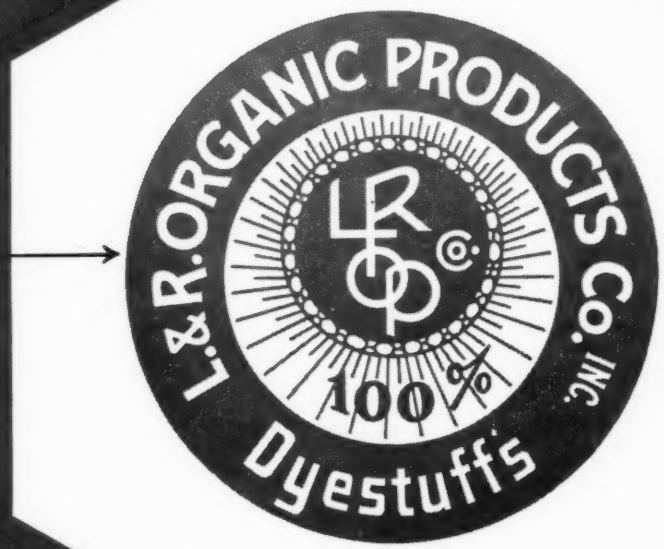

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Logwood gives you a chemically true black of unmatched beauty and real intensity. These full lustre blacks withstand steaming, fulling, weather and sun, also giving you perfect carding and spinning properties.

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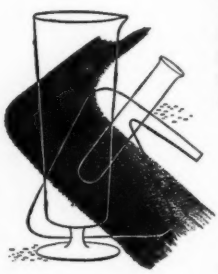

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for
"semi-permanent"

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DAREX*

high molecular weight Polyvinyl Acetate Emulsion X-56-L is outstanding because of its *fine particle size,* giving

- Little or no settling out even over relatively long periods of storage
- Minimum settling in very dilute form, in the padder
- Good yarn penetration and bonding to the fabric

X-56-L is outstanding because of its *emulsion stability,* giving

- Compatibility with a wide range of cationic, nonionic and anionic materials
- Normal pH limits 4.5-6; accepts alkaline materials to pH 12

X-56-L is outstanding because of the *high softening point* and *water resistance* of the resin, giving

- Better results in calendering
- Greater weighting, strength, and abrasion resistance in proportion to the resin/softener ratio and the weight of the finish applied

X-56-L is outstanding because of its *low cost,* giving

- Economical results, especially in view of the qualities imparted to the fabric

Further details are given in our Technical Bulletin E-2. Write for your copy today.

*T. M. REG. U. S. PAT. OFF.

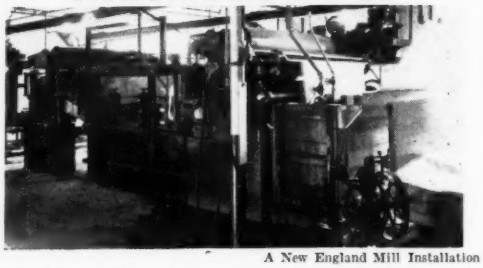
DEWEY AND ALMY CHEMICAL CO.

ORGANIC CHEMICALS DIVISION

CAMBRIDGE 40, MASSACHUSETTS

The Fleet Line

CARBONIZING RANGE



A New England Mill Installation

This modern installation is typical of recent Riggs and Lombard Carbonizing Range production. Women's wear woolens pass at 10-40 yards per minute from the wooden* wet out box through the rubber lined* steel acid tank, pin type tenter dryer, infra-red baker and continuous crusher mill (not shown), to washers, dye kettles or fulling mills.

Construction in every part of this Carbonizing Range is in keeping with Riggs and Lombard's reputation for superior wet finishing machinery. The skyframe is a good example. It permits longer exposure to acid in a given floor space by increasing the vertical travel of the cloth. Even when the cloth is above the bath level, the excess acid runs down over it on its way back into the bath. Soaking is thus more effective and complete.

Here are other installation features of the Riggs and Lombard Carbonizing Range:

1. **Heavy squeeze-roll extractor for maximum results regardless of speed.**
2. **Hydraulic, automatic, speed control insures constant even tension.**
3. **Variable speed drive.**
4. **Intermediate rubber squeeze rolls, rubber* immersion rolls and top idler rolls.**
5. **Thorough, even, uniform drying at temperatures below the boiling point.**
6. **In many installations a continuous neutralizer completes the range operation.**

* These often are of polished stainless steel, with SMO used in acid tank.

CIRCULAR ON REQUEST

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Send your inquiries or samples to be matched to:—

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"THE FINEST MADE"

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Rx for preventing pick-ups and pulled threads in running 10, 15, and 20 denier Nylon

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Oil cups for use on full-fashioned and seamless hosiery machines are available in quantity.

Reduce seconds or irregulars to as little as 2% with Nylon Oil No. 82. Used straight—not in an emulsion with water and other products. Blended to avoid effects of preboarding. Samples of Nylon Oil No. 82 available for testing purposes. Write today.

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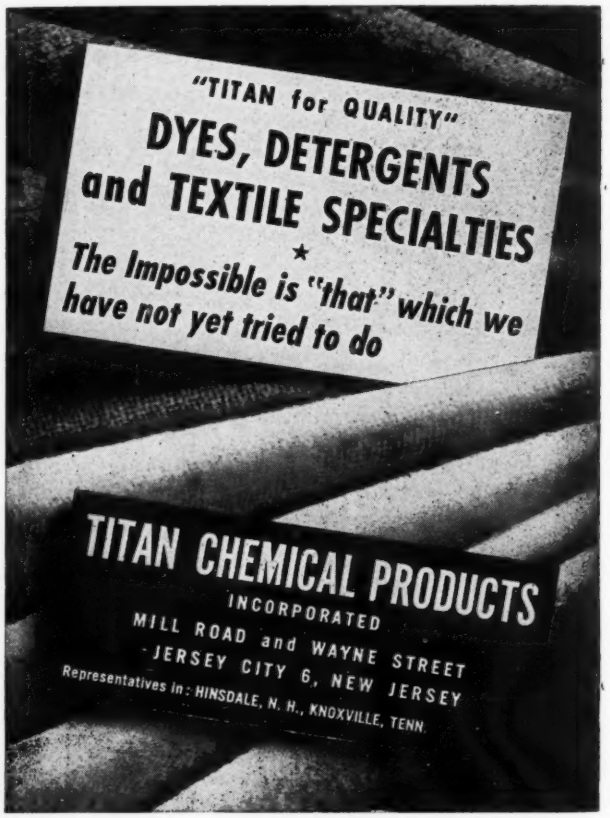
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DYES, DETERGENTS and TEXTILE SPECIALTIES
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The Impossible is "that" which we have not yet tried to do
TITAN CHEMICAL PRODUCTS
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Are interested in the import of the following groups of Dyestuffs:

DIRECT	ACID
BASIC	DIAZO
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HEAVY AND FINE CHEMICALS

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The name that means leadership in

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"Always Reliable"

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WHITE PINE OIL

Combined with soaps as a processing agent Newport White Pine Oil gives maximum efficiency with low costs.

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Ten ways to use the Gurley Permeometer*

Here's the versatile instrument for quickly and accurately measuring air permeability of fabrics which permit passage of from 1 to 400 cubic feet of air per square foot area at a pressure drop of 0.5" of water. Write for Bulletin No. 1600. W. & L. E. Gurley, 512 Fulton, Troy, N. Y.

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Use the Gurley Permeometer for measuring:

1. *Wind-proofness* of cloth.
2. *Quality* of filter cloth.
3. *Use requirement* of cloth intended to resist or pass air.
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6. *Construction* of cloth.
7. *Penetration* into cloth of various coatings.
8. *Retention of fillers, starch and sizing* in cloth after laundering or cleaning.
9. *Compactness, nap* or *fiber arrangement* in cloth after fulling, washing, sizing or other treatments.
10. *Amount of wear* after abrasion tests.

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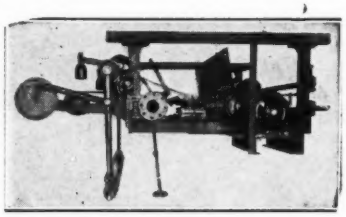
NEW and IMPROVED DYEING and FINISHING MACHINERY
for Woolens, Worsteds, Cottons, Rayons, Silks and Pile Fabrics
also MILL SEWING MACHINES

WELL BUILT MACHINES of MODERN DESIGN

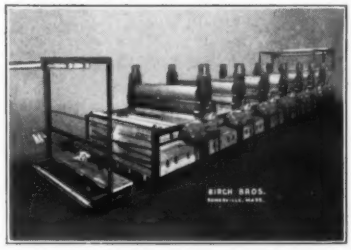


New Heavy Duty All Ball Bearing Cloth Opening and Folding Machine with Vacuum Extractor. All Drives by Cut Gears or Roller Chain. Drive by Built-in Motor, for opening and extracting woolens, worsteds, plushes, cottons and rayons.

SEND FOR CATALOG

Re-Enforced Adjustable Slot Vacuum Box with Handwheel Adjustment (Patented), with Ring Type Slot Seals. Used on Continuous Crabbs, Scouring Machines, Scutchers, Dryers, etc.

GIVES EXCELLENT AND UNIFORM EXTRACTION ON WORSTEDS, RAYONS, COTTONS AND PILE FABRICS



NEW BALL BEARING CONTINUOUS OPEN WIDTH MACHINE

Pressure applied through Pneumatic Cylinders and machine fitted with Cloth Guider. For crabbing Worsteds, Serges, Rayon Mixtures, etc. Scouring for Pile Fabrics, Dyeing or Soaping for Cottons and Rayons. Individual Motor or Side Shaft Drive. Machine made of material suitable for application, stainless, wood, cast iron. Drive by individual motors giving uniform cloth tension throughout.

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The Theory and Practice of Wool Dyeing

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Takes *less* Time

for Loading, Heating, Lacing, Doffing, Cleaning

Gives you *More* Time ***for the actual dye runs which build your profit***

AND it pays its way handsomely by cutting water and steam costs lower than ever. Everything *YOU'VE* ever wanted in a dye box has been incorporated in

The New BLICKMAN Fully Enclosed Stainless Steel Dye Box

Send for further information

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Manufacturers of stainless steel textile equipment, dye boxes, linings, cylinders, dry cans, rolls, hoods, tanks

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SINCE 1915

we have been specializing in world-wide **DISTRIBUTION** of **DYESTUFFS & CHEMICALS**

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This EXPERIENCE is available to manufacturers desiring expert cooperation in **FOREIGN DISTRIBUTION**

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We are in a position to finance reputable manufacturers of chemical products & dyestuffs.

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CABLE ADDRESS: COLORANTES NEW YORK, ALL CODES

101 WAYS TO SERVE YOU!

Consult us about your requirements of

- ★ Acids
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- ★ Flameproofing Compound
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Manufacturers of special chemical products to meet most every textile requirement.

APEX MARK of QUALITY

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Estab. 1900

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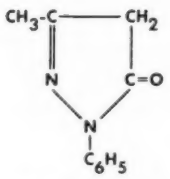
New York 1, N. Y.

Winthrop-Stearns INC.

SPECIAL CHEMICALS DIVISION

PHENYL METHYL PYRAZOLONE



1-Phenyl,3 Methyl Pyrazolone-5
White to light tan powder
MP - 127° C
less than 1% moisture

Intermediate for the production of Aniline and azo dyestuffs—

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SEND FOR PRICES AND TECHNICAL DATA NOW!

The businesses formerly conducted by Winthrop Chemical Company, Inc. and Frederick Stearns & Company are now owned by Winthrop-Stearns Inc.

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Please send your latest prices and technical data on Phenyl Methyl Pyrazolone.

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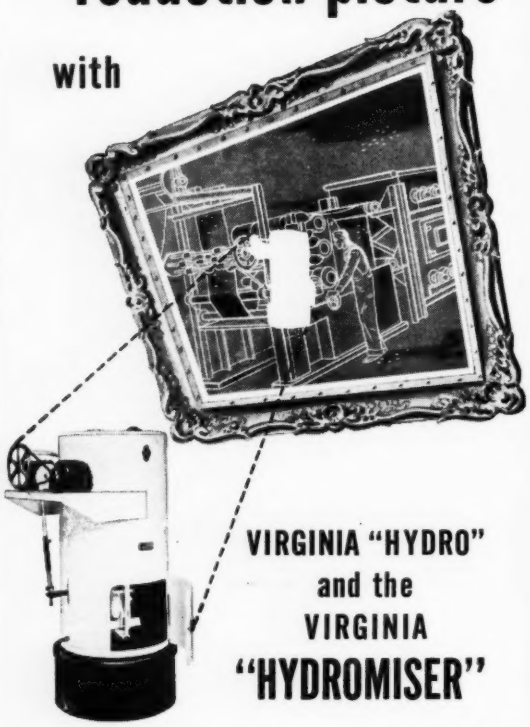


VIRGINIA "HYDRO" and the VIRGINIA "HYDROMISER"

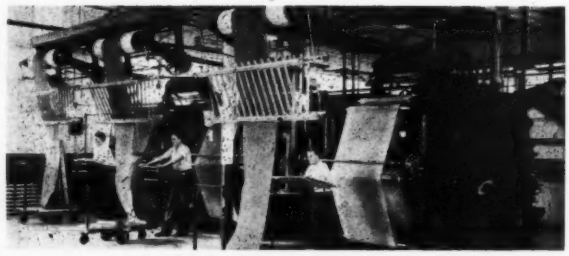
The Hydromiser—exclusive with "Virginia"—was developed to feed "Virginia" Sodium Hydrosulphite *automatically* into the dyebath. It insures uniformity through accurately controlled flow . . . one pound to 200 pounds per hour. Cost-conscious finishers report 10 to 15 per cent savings in $Na_2S_2O_4$ and a marked reduction of rejects in continuous dye operation. If your dye operation is continuous, you should get full information about the Hydromiser. VIRGINIA SMELTING COMPANY, West Norfolk, Virginia. *Established 1898.*

SULFUR DIOXIDE • SODIUM HYDROSULPHITE

VIRGINIA Chemicals

WEST NORFOLK • NEW YORK • BOSTON • DETROIT

FOR REWETTING IN PRODUCING •SANFORIZED• FABRICS



AQUAKAL 74

— is quick and effective

assures a better hand for your yarns and fabrics

Aquakal 74 is the rapid penetrant and leveling agent that tops the list — by Graves Test and on your machines. Use it wherever fast, even wetting and penetration are necessary.

Hydroxy Hand Cream — for the operators handling nylon, to keep their hands smooth.

KALI MANUFACTURING CO.

Manufacturing Chemists

427 Moyer Street Philadelphia 25, Pa.

WANTED

We will pay cash for the following:

SODIUM SULFIDE
CAUSTIC SODA
BICHROMATES
OXALIC ACID
DYESTUFFS
SODA ASH
UREA

Write, wire, or call TODAY

FARBER PRODUCTS CO., Inc.

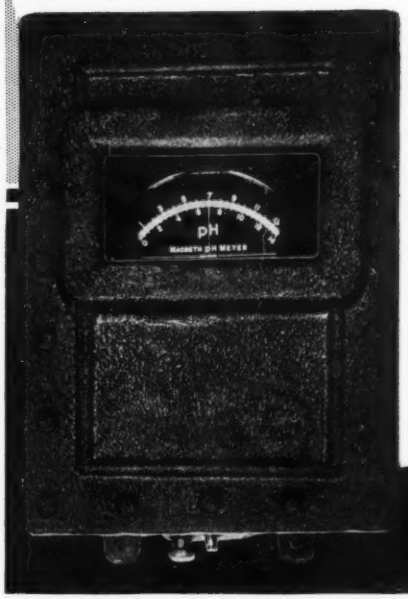
226 Lafayette St. New York 12, N. Y.

BEekman 3-6120

THE NEW

MACBETH *Explosion Proof* pH METER

•LINE OPERATED •DIRECT READING •CONTINUOUS INDICATING



Announcement is made of the first explosion-proof pH Meter, designed in accordance with Class 1, group D requirements for use in atmospheres containing gasoline, petroleum, ethyl alcohol and acetone.

Line operated, continuous indicating, direct reading, enclosed in a heavy cast metal protective casing, the new Macbeth explosion-proof pH Meter is provided with flow-type electrodes and a connection for operating a recorder at a remote position.

Write for complete details.

See the new Macbeth explosion-proof pH Meter, Booth 201, Exposition of Chemical Industries, Grand Central Palace, New York, December 1-6, 1947.

MACBETH

CORPORATION 227 WEST 17th STREET, NEW YORK CITY

Reliable Well Established Manufacturer

is seeking new and original processes, formulae, etc., for the manufacture under royalty or other suitable arrangement of chemical specialties suitable for bulk distribution to manufacturers in the textile or allied industries. All replies will be held in strict confidence. Reply to Box 351.

PROTEAN W

A powerful protective agent
For fiber protection in acid dyeings
And in color stripping operations

PROTEAN LAMEPON

A protective, dispersant and wetting agent in neutral and alkaline media.

For dyeing, leveling, scouring, washing and bleaching all types of fiber.

Inquiries are invited from textile chemical manufacturers interested in producing additional specialties.

PROTEAN CHEMICAL CORP.

150 Nassau St., New York City

• CLASSIFIED ADVERTISEMENTS •

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $7.50 per column inch or less per insertion.

Leading Manufacturer in New York City invites applications of Graduate Chemists having some experience in protein textile fibers. Write stating qualifications and experience. Write Box 322.

POSITION WANTED: Woolen and Worsted skein yarn dyer. Thorough knowledge of acid, chrome and alizarine colors for knitting and weaving. Artificial and daylight matchings. Twenty-five years practical dyehouse experience. Age 45. Now connected with one of the long established dyehouses in the East. Write Box 314.

AVAILABLE: MANAGERS ASSISTANT—Head of Application Lab. Experience 21 years Dyestuff business, Laboratory, Demonstrating, Sales, Colorist for Dyestuff Manufacturer, Soluble Vats, Acid, Chrome, Direct Acetate Dyeing and Printing. Lowell Textile graduate. Salary minimum $6500. Write Box 335.

MALE HELP WANTED: Secondhand in dyehouse, experienced in package dyeing, also open tub dyeing of knit goods, cotton-and-rayon, and combinations wool and cotton. When replying state salary expected to Box 337.

POSITION WANTED: Quality Controller—The man described in this ad knows the business of rayon dyeing and roller printing forward and backward. He is accustomed to heavy responsibility and is a good trouble shooter in all plant activities. He has creative ability, tempered by long practical experience. His chemical background, skill and experience warrants a fairly high salary. Interested only in a big job that needs doing. Write Box 330.

DYER WANTED: Large leading progressive Southern seamless hosiery mill offers excellent opportunity with real future for right man. To be assistant dyer. Prefer man with textile school education with some practical dyeing experience. Experience in dyeing cotton yarns and hosiery, vats and directs desired, but not required. Give full details, including salary requirements. Write Box 341.

TECHNICAL SALES REPRESENTATIVE: Wanted by well-established sizing specialists to help develop line of textile auxiliaries and finishes. Require: young man, at least 5 to 10 years' experience in wet processing and finishing, good sales personality. Good salary for right man, excellent future. Southeast. Write Box 344.

TECHNICAL SALES CHEMIST—To develop uses for colloids in food and pharmaceutical fields. Headquarters New York area. B.S. in chemistry with several years technical sales experience. Age 28-38. State experience and salary requirements. Write Box 339.

DYESTUFF CHEMIST—Experienced in textile printing for technical sales and service. Headquarters New York area. Age 28-38. State experience and salary requirements. Write Box 340.

WANTED: Young chemist as assistant for large New England throwing plant handling synthetics. Should have at least one year of experience. Write in detail, qualifications and salary expected. Confidence respected. Write Box 342.

POSITION WANTED: Superintendent of dyeing, technical college graduate, age 47, 25 years' experience cotton or rayon, skein or package, all types of colors. Excellent references. Would consider sales and demonstration. Write Box 343.

CHEMIST OR CHEMICAL ENGINEER: With firm background in field of textile chemistry, and preferably having some knowledge of resin polymers, for research in evaluation and development of resinous finishes for textiles. Responsible position, salary commensurate with experience. Metropolitan New Jersey. Give full details in first letter. Write Box 345.

Sales Representatives for long established manufacturer of complete line of soap and allied products, for textile, laundry, janitor supply, etc. fields. Will consider full-time salary and bonus or part-time commission. New England and Southern territories open. Write Box 346.

WANTED: Dyeing and finishing foreman for cotton and rayon piece goods. Good salary to right man. Modern plant in Piedmont, North Carolina. Nationally-known organization. Write Box 347.

POSITION WANTED: As lady hosiery dyer possessing laboratory research and sales control and dyehouse production. Seventeen years as head dyer for a large hosiery manufacturer in the South. Excellent references as to ability and character. Write Box 348.

POSITION WANTED: Cotton and rayon piece goods finishing control chemist with 23 years' experience. College graduate, able to assume charge of laboratory. Prefer location north of Virginia along seaboard. Write Box 349.

WANTED: A foreman for California plant, experienced in dyeing (fast colors) and finishing cotton, silk, rayon, wool piece goods and yarns. Write Box 353.

ADDITIONAL CLASSIFIED ADVERTISEMENTS ON PAGE LXXXVIII

CHEMICALS O·M·B INC DYES

DYESTUFF MANUFACTURERS

Since 1917

OTTO B. MAY INC.

MAIN OFFICE AND PLANT
198-214 NIAGARA STREET
NEWARK 5, NEW JERSEY

CHARLOTTE, N. C. *Representative*
DYER S. MOSS
1301 LIBERTY LIFE BUILDING

DE PAUL
RESEARCH PROGRESS

TEXTILE SPECIALTIES

LIQUEX No. 300
an excellent detergent for all fibers

DEPCO FINISH CA
a cationic softener

DEPCO RESIN L
a non-curing type of resin

PIGMENT WHITE No. 18R
an excellent discharge paste

CHEMO-BLEACH PX
for improved whites

(ASK FOR TRIAL SAMPLES)

DE PAUL
CHEMICAL COMPANY, INC.
44-27 PURVIS STREET · LONG ISLAND CITY 1, N.Y.

● CANADIAN AGENT: CHEMTEX LTD., TORONTO, ONTARIO ●

• CLASSIFIED ADVERTISEMENTS •

WANTED: Practical Textile Dye Chemist, able to make tintorial dye evaluations and dye tests on Directs, Acids, Vats and Naphtols. Man with dyestuff laboratory experience preferred. Permanent position. Laboratory located in New York City, Manhattan. Write giving full details including salary to Box 352.

WELL ESTABLISHED SHANGHAI DYESTUFF FIRM wishes to represent American dyestuff manufacturers. We have best connections all over China and Hongkong. Replies to P.O.B. 1553, Shanghai, China.

WANTED: Textile Chemist with practical laboratory experience in matching shades and analyzing dyestuffs. Excellent opportunity to aggressive party. State age, experience, salary required to Box 354 c/o American Dyestuff Reporter, One Madison Avenue, N. Y. 10, N. Y.

DYESTUFFS WANTED!
We will purchase for cash your surplus dyestuffs. All colors. Immediate action. Write, wire, Box 350.

FOR SALE

1 TEXTILE 2-ROLL HYDRAULIC CALENDER, 15 JIGS—6 OF THEM VAN VLAANDEREN, 3 HENNIKEN AND 6 MORRISON. THE VAN VLAANDEREN HOOKED UP IN SERIES OF 3, DRIVEN BY 3 H.P. MOTOR. THE BALANCE ARE INDIVIDUAL DRIVE.

WRITE BOX 355

WANTED: YOUR SURPLUS DYESTUFFS
Vat powders, acid, chrome, direct, and naphthol dyes wanted by this substantial organization. Write, wire, or phone Shepard Chemical Corporation, 117 Liberty St., New York 6. Phone: WOrth 2-7839.

Wanted
DYESTUFFS-CHEMICALS
Top prices paid for inventory
and surplus dyestuffs and chemicals
of all types.
Sanders & Sloat, Inc.
180 Broadway, New York 7, N. Y.
BEekman 3-5894

DYESTUFF—CHEMICALS: Top Prices paid for excess and surplus lots, particularly Direct Blacks, Benzo Purpurine 4B, Indigosols, Vats, Malachite Green. Write Box 332.

Additional Classifieds on Page LXXXVI

Have you ordered a Binder for your Reporter copies?

Maroon leatherette, gold lettered, large enough to hold twenty-six issues, only $3.00 post-paid.

Please send check with order to:

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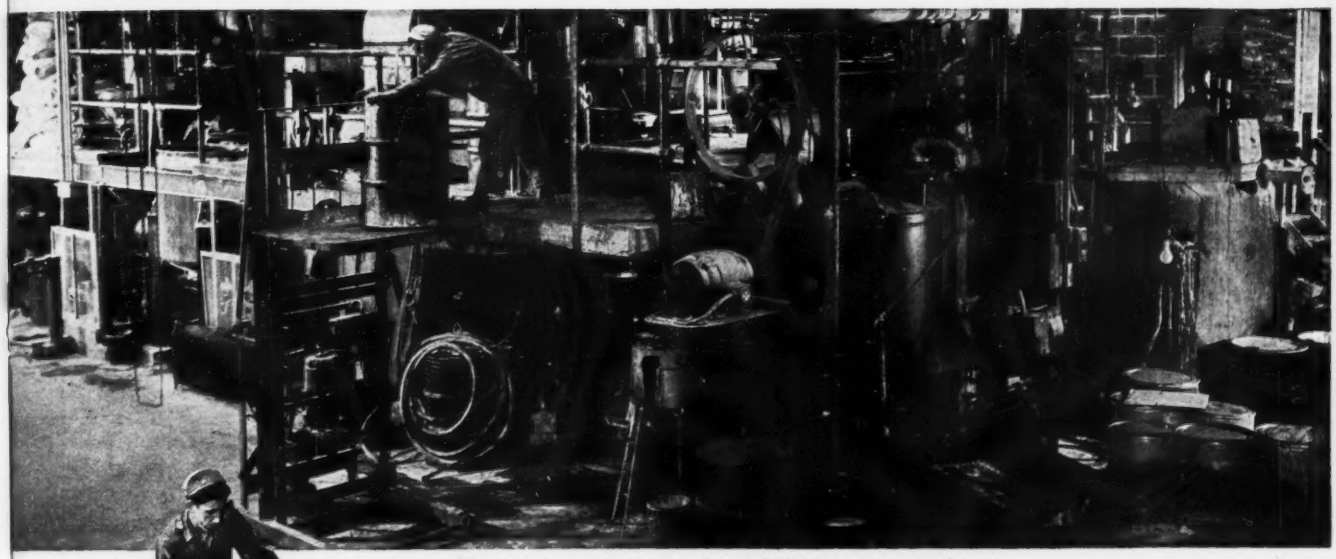
AMERICAN DYESTUFF REPORTER

ONE MADISON AVENUE

New York 10, N. Y.

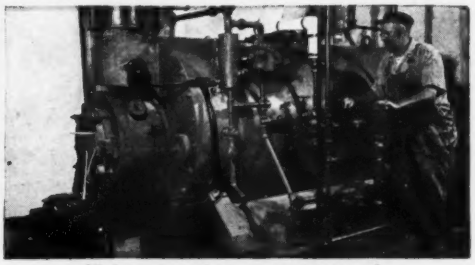
Detergen

Preparing
—section

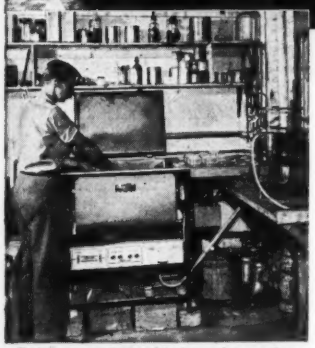


View showing modern sulfonation and high-temperature equipment

Above { *Left:* Cleaning stainless steel kettle
Right: New high-pressure autoclave



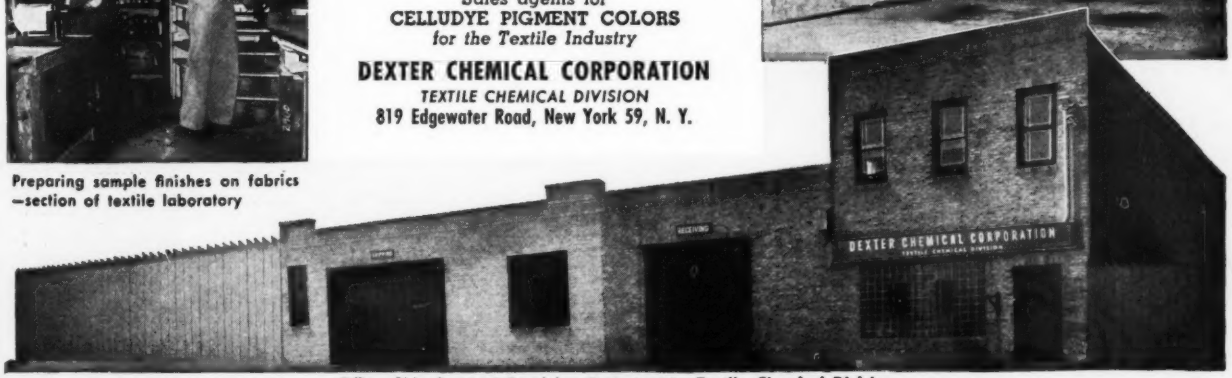
High-pressure steam generator: one of first to be used in civilian industry



Detergency test with Launderometer

Above: Large stock reserve of raw material
Below: Loading platform—Shipping Department

Preparing sample finishes on fabrics —section of textile laboratory



Office, Shipping and Receiving Departments—Textile Chemical Division

DEXTER
INDUSTRY'S RIGHT HAND

Under this trademark — symbolic of our service to the textile industry—we manufacture a complete line of processing agents for use with Wool, Cotton, Synthetics, Hosiery and Knitwear.

These include the widely-known products

KOPAN • DYPENOL • TELKANOL
CLAVODENE • DEXENE • DEXTROL
MAXITOL • DEXOLENE • REXAN

Sales agents for
CELLUDYE PIGMENT COLORS
for the Textile Industry

DEXTER CHEMICAL CORPORATION
TEXTILE CHEMICAL DIVISION
819 Edgewater Road, New York 59, N. Y.

AROMINE

DYE-BATH ASSISTANT

This versatile textile wet-processing aid is most unique. It combines the properties of a fast wetting agent, synthetic organic detergent, and water normalizer. AROMINE is a much better than average penetrant and dyeing assistant, and is at the same time an excellent detergent and scouring medium. Furthermore, AROMINE will prevent the formation of insoluble soap spots and scums, and remove them if already present.

AROMINE is effective in hard or soft water, acid or alkaline baths. Surprisingly small quantities are required for most textile applications. It is safe to say that there is no other textile chemical quite like AROMINE available.

BURKART-SCHIER CHEMICAL CO.
CHATTANOOGA, TENNESSEE
MANUFACTURING CHEMISTS FOR THE TEXTILE INDUSTRY

BURKOL

SYNTHETIC DETERGENT

BURKOL is a true detergent. That is, it possesses scouring and cleansing power to a marked degree, whereas the majority of the so-called synthetic organic detergents are primarily wetting agents.

BURKOL is economical to use, because it is low in cost and but a little is required for effective results. It is well suited for scouring and boiling off all types of textiles, including raw stock, yarns, hosiery, and fabrics. **BURKOL** may be applied in hard or soft water.

Goods scoured with **BURKOL** acquire a pleasing soft finish, which is well-retained through subsequent dyeing operations, so that usually no further finishing is required.

BURKART-SCHIER CHEMICAL CO.
CHATTANOOGA, TENNESSEE
MANUFACTURING CHEMISTS FOR THE TEXTILE INDUSTRY

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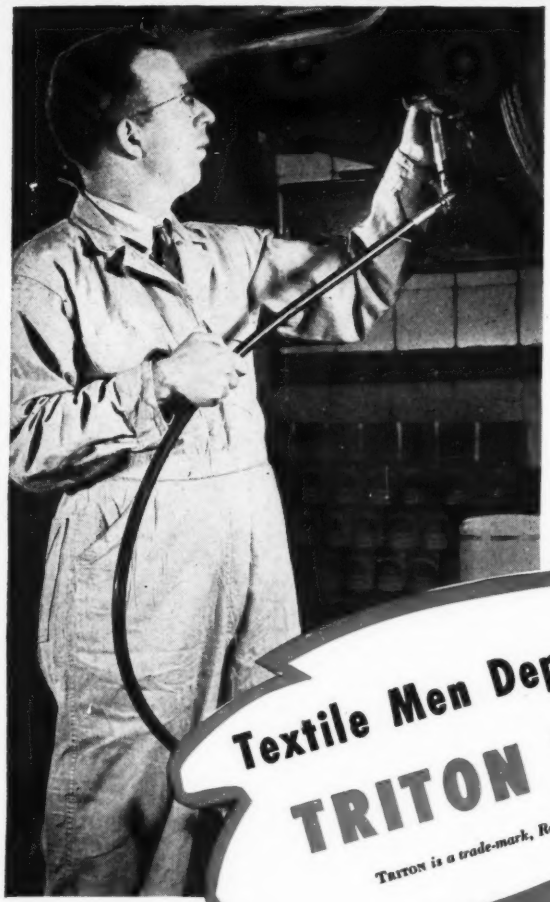

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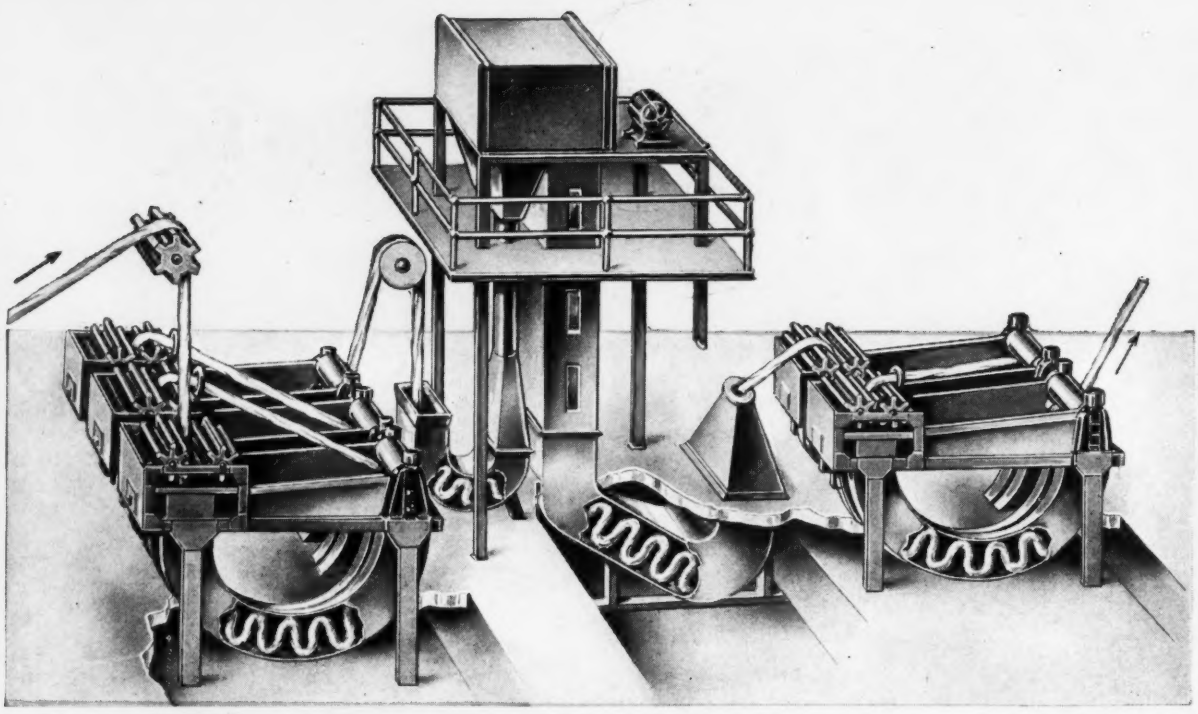

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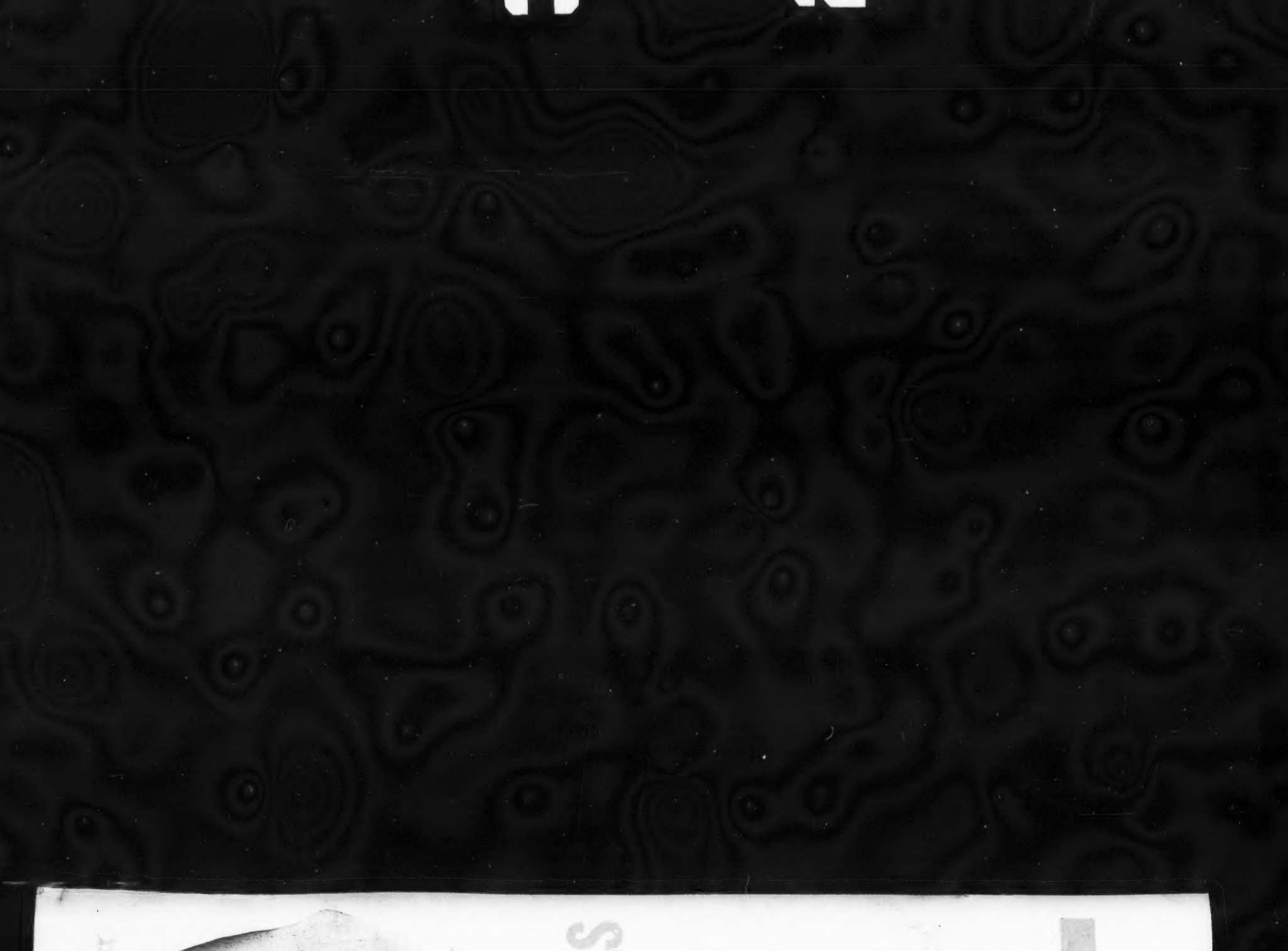
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